

NOVEMBER  
1913

10  
CENTS

# MOTOR BOATING



In this Issue

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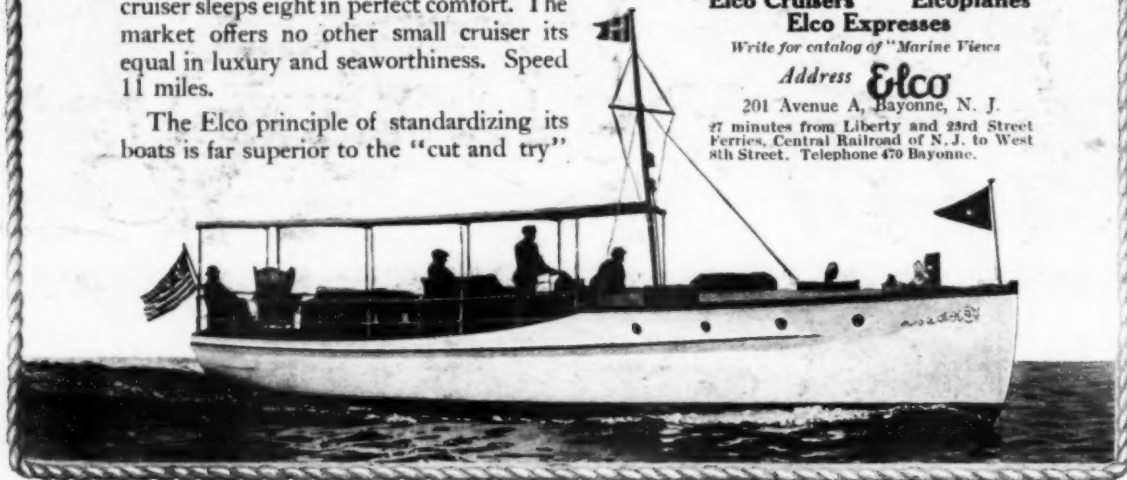
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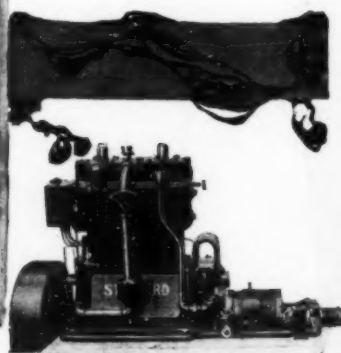
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## NOVEMBER, 1913

The Fastest Boat of the Season.....	Frontispiece	Prize Contest in Questions and Answers—	
Flying in a Flying Boat.....	3	Changes in Motor Design.....	24
Motor Boating's Annual Review of Racing.....	6	A Cabin Wall Rack.....	26
The Championship Races of 1913.....	8	The Best Cabin Interior.....	28
Racing on the Schuylkill.....	9		
Channel Marks and Danger Signals.....	10	An Architect's Novel Office.....	29
The Chronometer, Time and the Determination of Longitude .....	12	Marine Motors—	
Diesel Powered Motor Yachts.....	13	Elco, Lamb, Wolverine and Holmes.....	30
A Twin Screw Motor House Boat.....	14		
Building Q & A.....	16	Helpful Hints for Motor Boatmen.....	32
<b>New Motor Boats—</b>		Devices and Stunts.....	33
A Cruiser of Roomy Design.....	17	Among the Clubs.....	34
Oomingma, a Scottish Cruiser.....	18	Letters from Motor Boating Readers.....	35
A 37-Footer for Mexican Waters.....	18	Motor Boats of Stock Design.....	37
Sea Wolf .....	19	New Things for the Motor Boatman.....	38
A Tunnel Stern 40-Footer.....	20	Yard and Shop.....	40
A 110-Footer for the Lakes.....	20		
Vincent Astor's Sea Sled.....	21		
Lydia III, an Off-Shore Cruiser.....	22		
A Boat with a Wicker Interior.....	23		

The cover picture on this issue is a painting by James Verrier from an actual photograph taken at the recent international races in England and shows the French boat, Despujols and the 40-foot English defender, Maple Leaf IV.

November, 1913

**MOTOR  
BOATING**

Vol. XII, No. 5

**THE NATIONAL MAGAZINE OF MOTOR BOATING**

Entered as second-class matter at New York, N. Y., Post Office.

Copyright, 1913, by MoToR BoatinG

Published Monthly by New Publication Company, 119 West Fortieth Street, New York City

G. L. Willson, President

George von Utassy, Treasurer

C. J. Shearn, Secretary

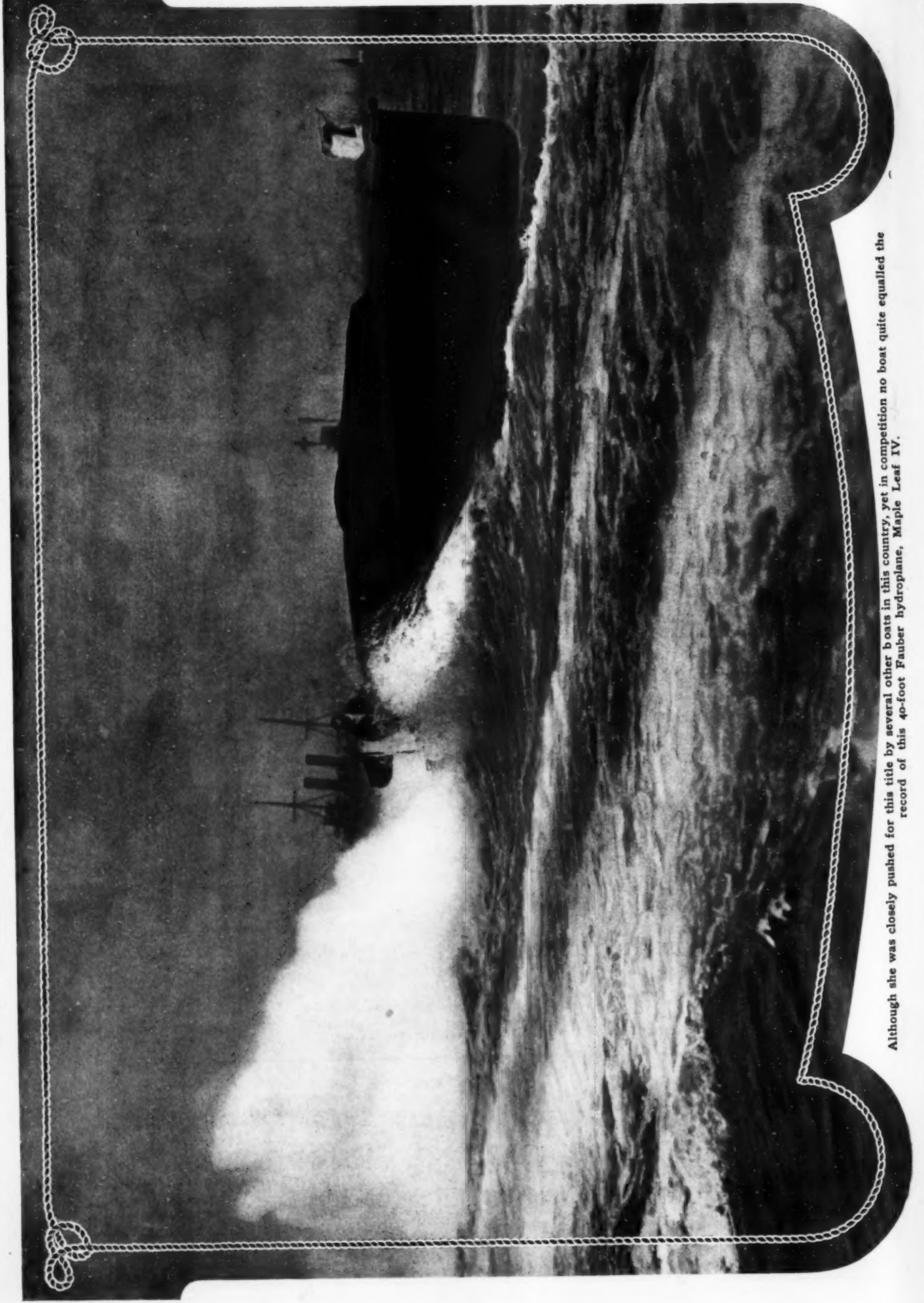
Telephone: Bryant 8760.

Cable Address: Motoria

10 cents a copy. Subscription, \$1.00 a year

European Agents: Saarbach's News Exchange, Mainz, Germany

## The Fastest Motor Boat of the Racing Season of 1913.



Although she was closely pushed for this title by several other boats in this country, yet in competition no boat quite equalled the record of this 40-foot Fauber hydroplane, Maple Leaf IV.





Up among the clouds. This reproduction from an actual photograph shows how the flying boat banks in making a sharp turn while in the air.

## Flying in a Flying Boat.

The Story of the Evolution of the First Craft to Travel Successfully in Two Mediums.  
The Safety of the Curtiss Flying Boat Over the Aeroplane.

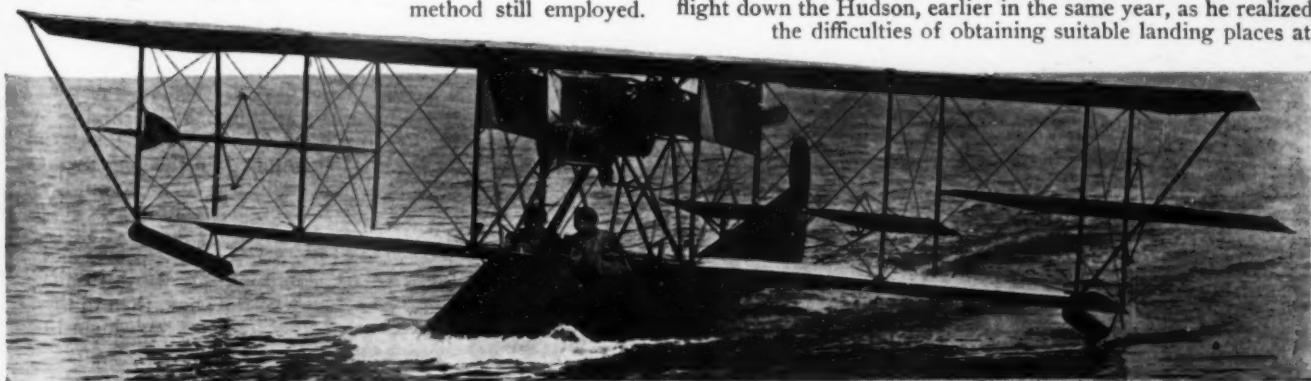
*Article and Photographs by the Owner of Babetta.*

**W**HEN the Wright brothers, just ten years ago, demonstrated to a skeptical world the possibility of traveling for substantial distances through the air in a machine heavier than the air which it displaced, they used a machine which was designed for travel only in the air except for the short run which it made on a starting rail with the aid of a pulley and weight in getting "under way." It was purely an air vehicle, and, in alighting, came down on skids which took the shock of landing and served to keep the planes from contact with the ground. Naturally such a machine was very limited in its usefulness, for, although the Wrights did make some starts directly from the ground without the aid of the starting rail, it was practically always obliged to return to its starting point at the end of each flight in order to start again.

The earliest European—and that really means French—practice, which was soon adopted by the Wrights, was to use wheels and to make the start into the air after a run of greater or less length along the ground. This, as is well known, is the method still employed.

Next came the hydro-aeroplane, which is nothing more nor less than an aeroplane fitted with pontoons so that it may start from and alight on the water. The pioneer work in this line was done by Curtiss following the successful attempt of Ely, at San Francisco, in 1910, to fly from land and alight on and start from a battleship in the harbor. The machine which Ely used was a regular wheeled Curtiss aeroplane, and this first association of things nautical and aeronautical brought out great possibilities and pointed out certain developments and improvements which were necessary before there could be realized the full value of the newer mode of travel when used in conjunction with the older.

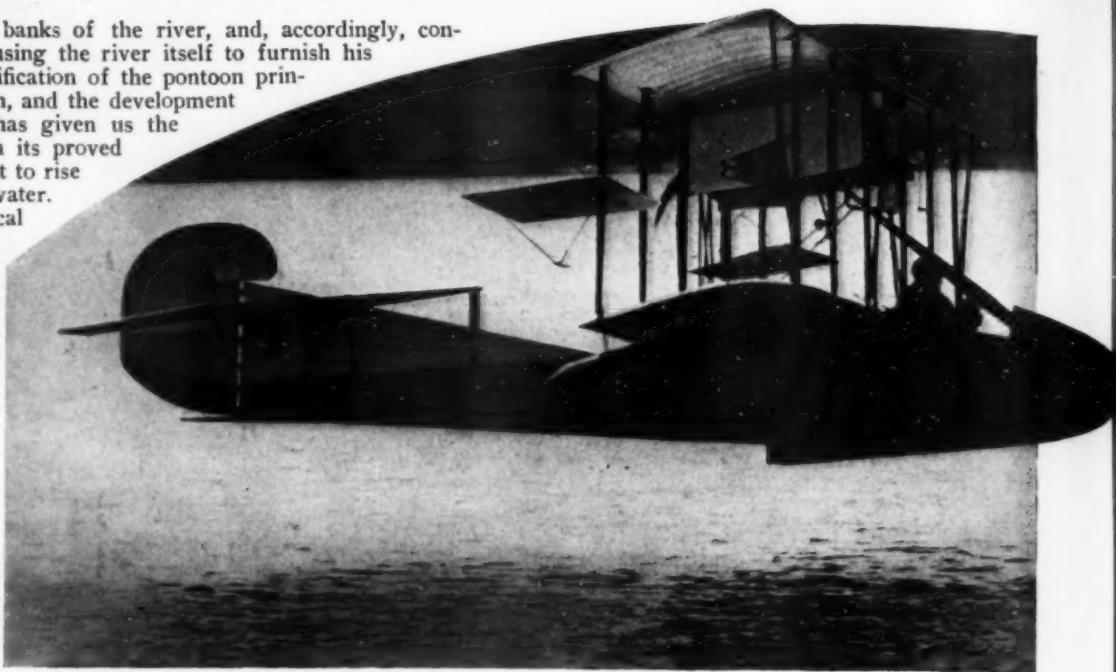
The question of operating a flying machine from a battleship developed a further line of thought, which took the form of providing means to insure the aeroplane remaining afloat should she fail at any time to connect up with her parent ship with its specially constructed landing stage. This idea was also in Curtiss' mind when contemplating his world-famous flight down the Hudson, earlier in the same year, as he realized the difficulties of obtaining suitable landing places at



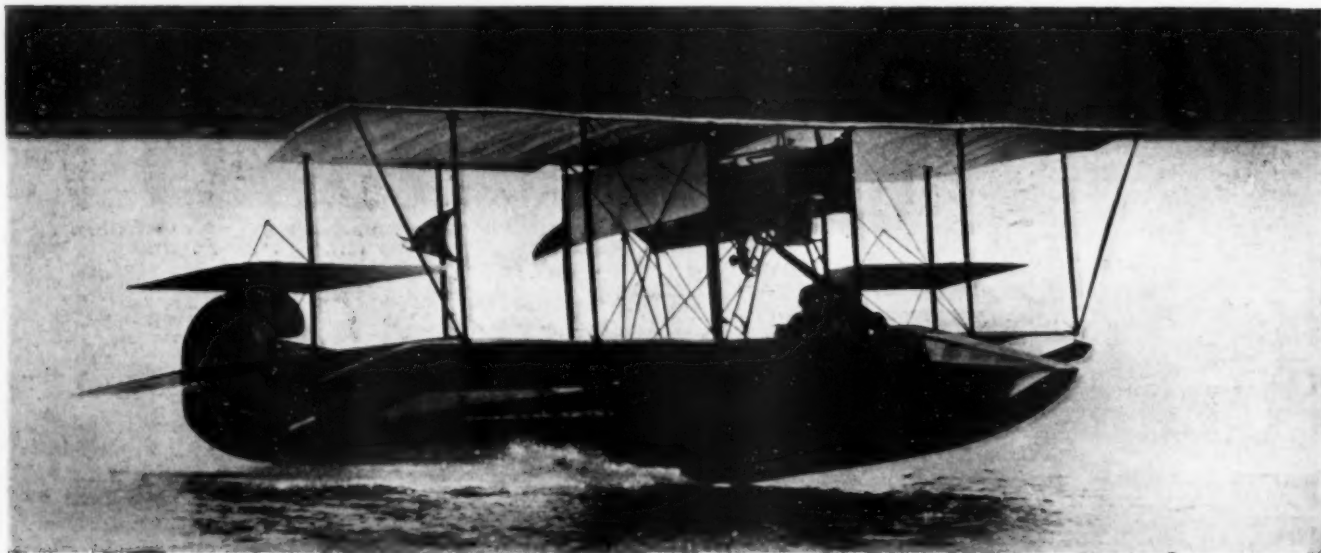
The pontoons at the end of the lower plane which just touched the water at slow speeds give stability and prevent the plane from cutting under.

convenient points on the banks of the river, and, accordingly, conceived the bold idea of using the river itself to furnish his needs. Obviously a modification of the pontoon principle provided the solution, and the development of this connecting link has given us the flying boat of today with its proved ability not only to float but to rise from and return to the water.

It was the first practical vehicle ever to travel in two mediums equally well, and is today, in its present state, a successful boat and a successful aeroplane as well. Its greatest advantage is, perhaps, its safety, and its safety comes from the fact that it can always find a safe landing place if its operator is not so adventurous as to fly for great distances over land in a machine designed for flying over water. With the aeroplane, however, it is difficult to find a suitable spot for alighting, and



In the air. She is now between ten and twenty feet above and is essentially an aeroplane.



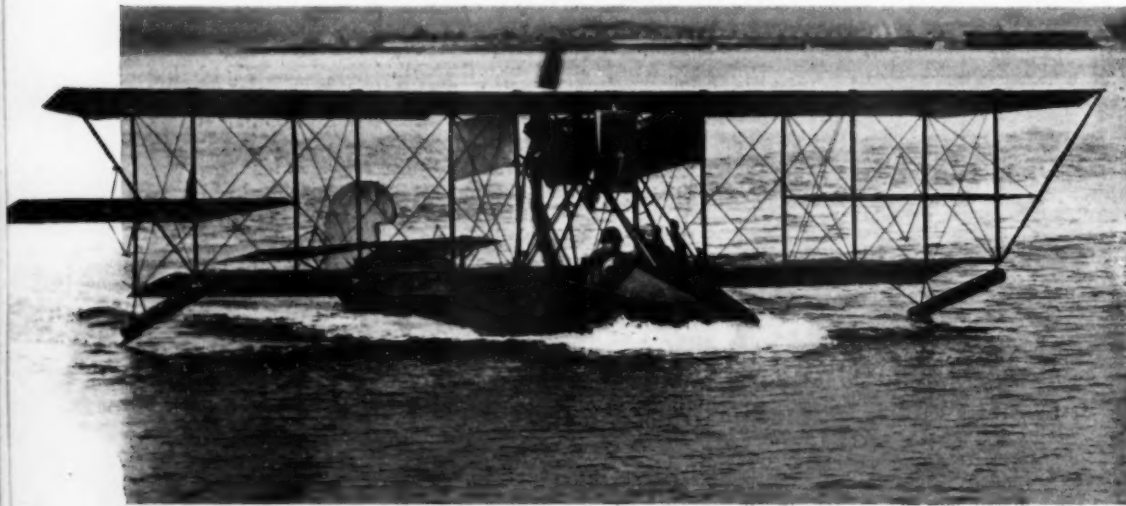
Beginning of the transition from boat to flying machine. She is travelling on her step much like a hydroplane at speed.

it is much more difficult to do so when in the air, as what looks to the operator in flight like a good bit of ground may prove to be too rough for a safe landing. Furthermore, the wheeled

machine will keep afloat but a short time if it happens to drop into the water.

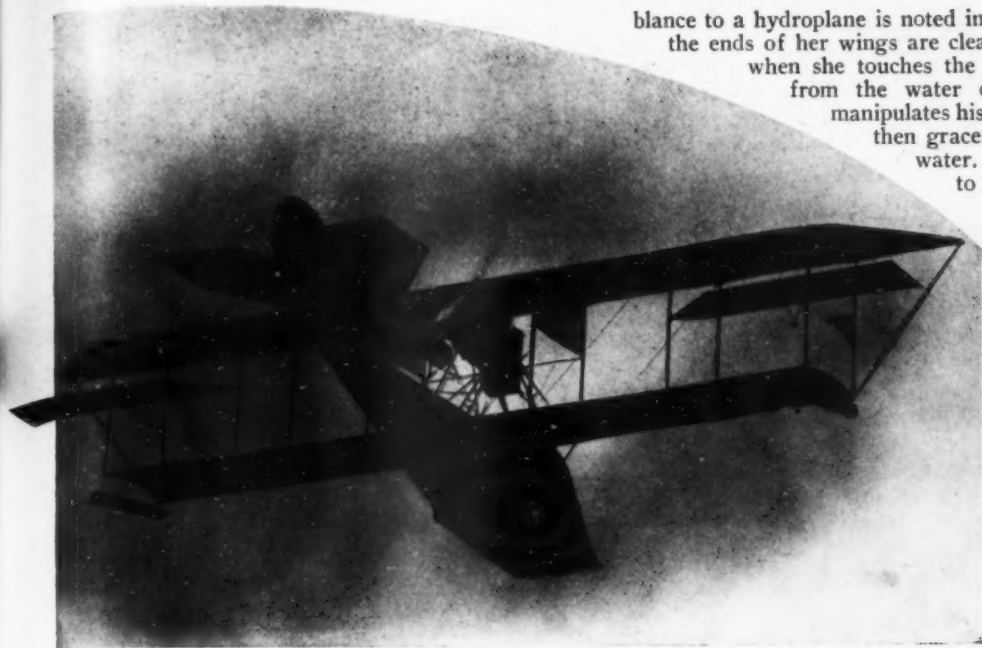
With a flying boat, one may run slowly in the water at the speed of the average motor boat or skim along its surface on the step at a greater speed than ever attained by any international racer, or one may leave the water and take to the air and go faster still and be independent of rocks and shoals and the other natural enemies of the motor boatman.

The photographs on these pages show the several stages in the flight of a flying boat, and they are arranged on the pages with the idea of carrying out the effect. Beginning at the lower left-hand portion of the left-hand page and continuing upward to the top of the page, then to the opposite page and down to



The boat getting under way, well down in the water and travelling very much like a displacement boat.





In full flight. The only visible distinguishing points are the pontoons—in other essential respects the flying boat is a biplane.

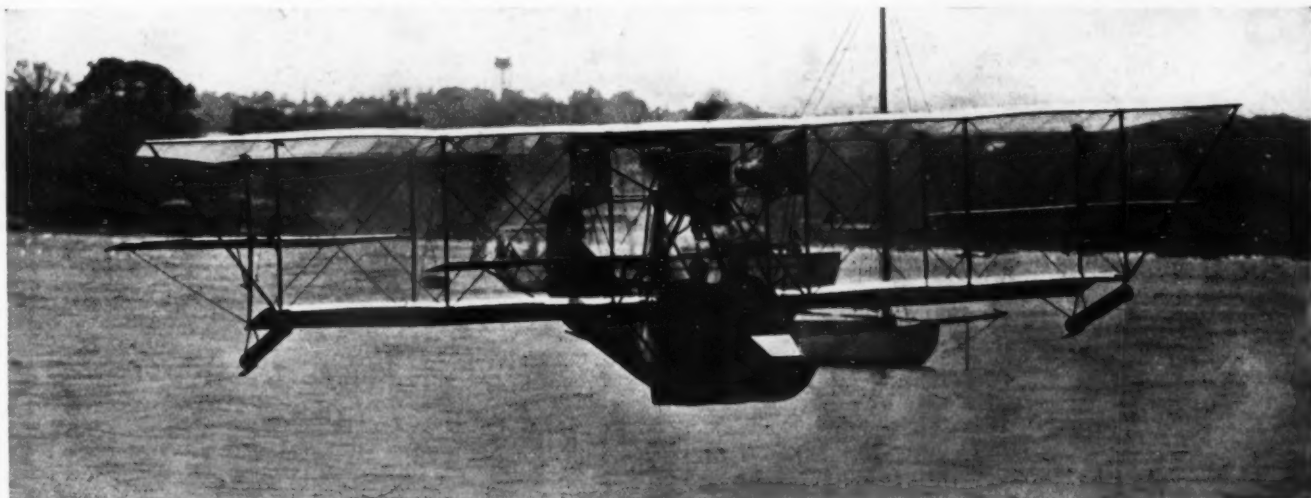
blance to a hydroplane is noted in her forward lines; the pontoons at the ends of her wings are clearly shown and their steadying action when she touches the water is realized. As the distance from the water decreases, the operator judiciously manipulates his tilting planes, the craft touches, and then gracefully glides upon the surface of the water.

All that now remains is to guide her to either a smooth stretch of beach or to a prepared way, and finally the craft comes to rest, as shown in our last picture, having safely, speedily and comfortably overcome the hitherto accepted laws of nature as applied to the two elements, water and air.

The operation of the Curtiss Flying Boat is a relatively simple matter, and is, once the boat is in the air, precisely similar to that of the aeroplane.

When getting under way from the water, the speed is rapidly increased by opening the throttle, taking care, however, to accelerate gradually so as to allow the boat to mount on her step and plane without throwing water into the propeller. Once a speed of about

(Continued on page 62)



Descending. She is now approaching the water and once again the resemblance to a hydroplane is noted in her forward lines.

the lower right-hand corner, we have:

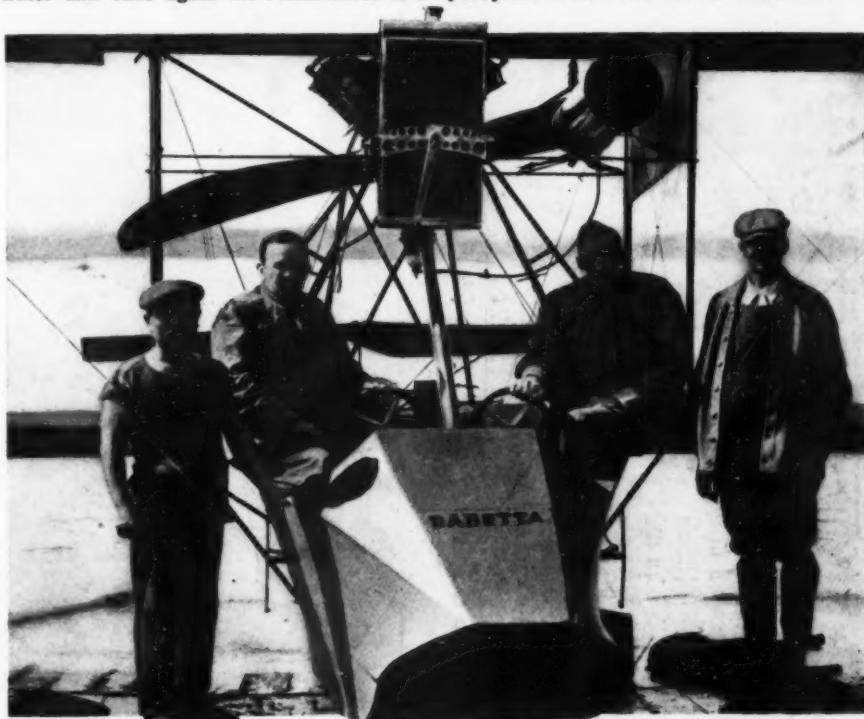
The boat just getting under way, well down in the water and traveling very much like a displacement boat. The pontoons on the ends of the lower plane are just touching the water, steadying the machine and preventing the plane from cutting under.

The beginning of the transition from boat to flying machine. She is traveling on her step like a hydroplane at speed. In this way she can get along at better than fifty miles an hour and handles very much like the very fast hydroplanes.

In the air. She is now between ten and twenty feet above water and is essentially an aeroplane, no longer dependent upon the water until the landing is to be made.

In full flight. The only visible distinguishing points are the pontoons—in other essential respects the flying boat is to all intents and purposes a biplane, her balancing being maintained as in the orthodox air craft, and the obviously boat-like constructional points emphasized in the earliest stages being entirely dominated by those of the aeroplane of accepted type.

Descending. She is now approaching the water, and once again the resem-



She glides upon a beach or specially prepared way at the end of the flight.

# Motor Boating's Annual Review of Motor Boat Racing.

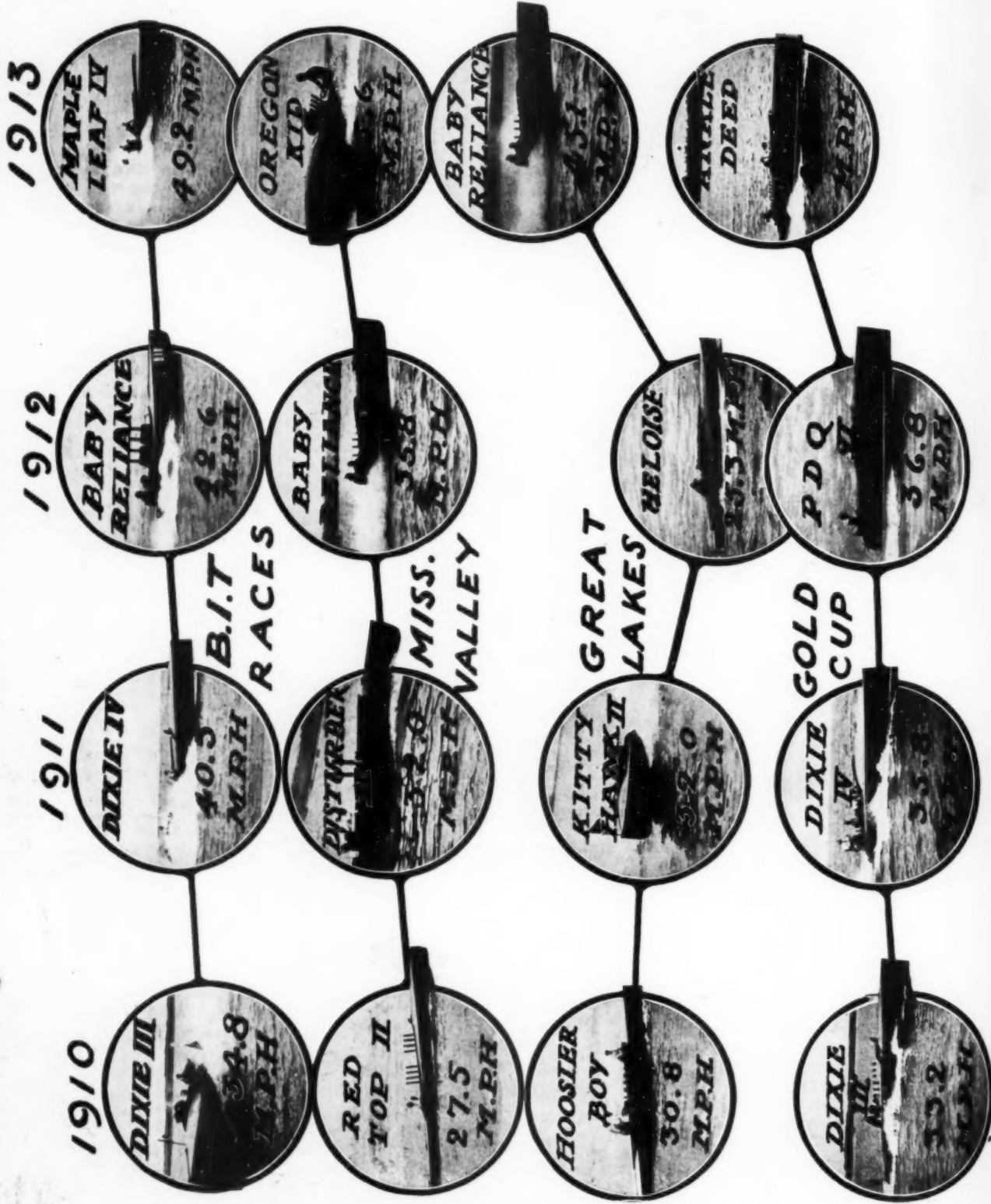
The Names and Pictures of the Boats Which Have Made Most Creditable Performances for the Past Four Years in Eight Big Annual Race Meets.

THE racing season just closed has been a most successful one from many standpoints, as everyone knows who has followed the results of the past four months. Speeds have been constantly going up in a sane and rational degree, and these in general have not been accomplished by using excessively high-powered motors, or a more expensive outfit throughout than formerly.

Excepting the performance of the 40-foot Maple Leaf IV in English waters during the British International Races in September of this year, the greatest speed honors go to 20-footers with only a moderate amount of power. In fact, in the seven most impor-

The Speeds Which These Boats Have Made in the Competitions. Arranged in Order of the 1913 Records. An Interesting Comparison of Their Designs.

winner. Where a number of separate and distinct races were held at any meet, we selected the fastest race for illustrating our point. For example, at the Chicago Carnival there were a number of distinct races, and each was decided by a series of heat races. Here Oregon Kid was the winner of the 32-foot class, although she was beaten in the finals of both the 20- and 26-foot classes. However, her time for twelve miles in the third heat of the 32-foot class was better than any speed of the winner in either the 20- or 26-foot classes, and thus allowed this class and Oregon Kid to be chosen as representatives in our method of determining





tant annual races held in the country this year, which are shown on these pages, six of the winners were twenty-footers, which speaks a good deal for the efficiency of this design, not only from a speed standpoint but from one of general seaworthiness as well. 1913 was the first year that this small-sized racing craft came to the front in such large numbers.

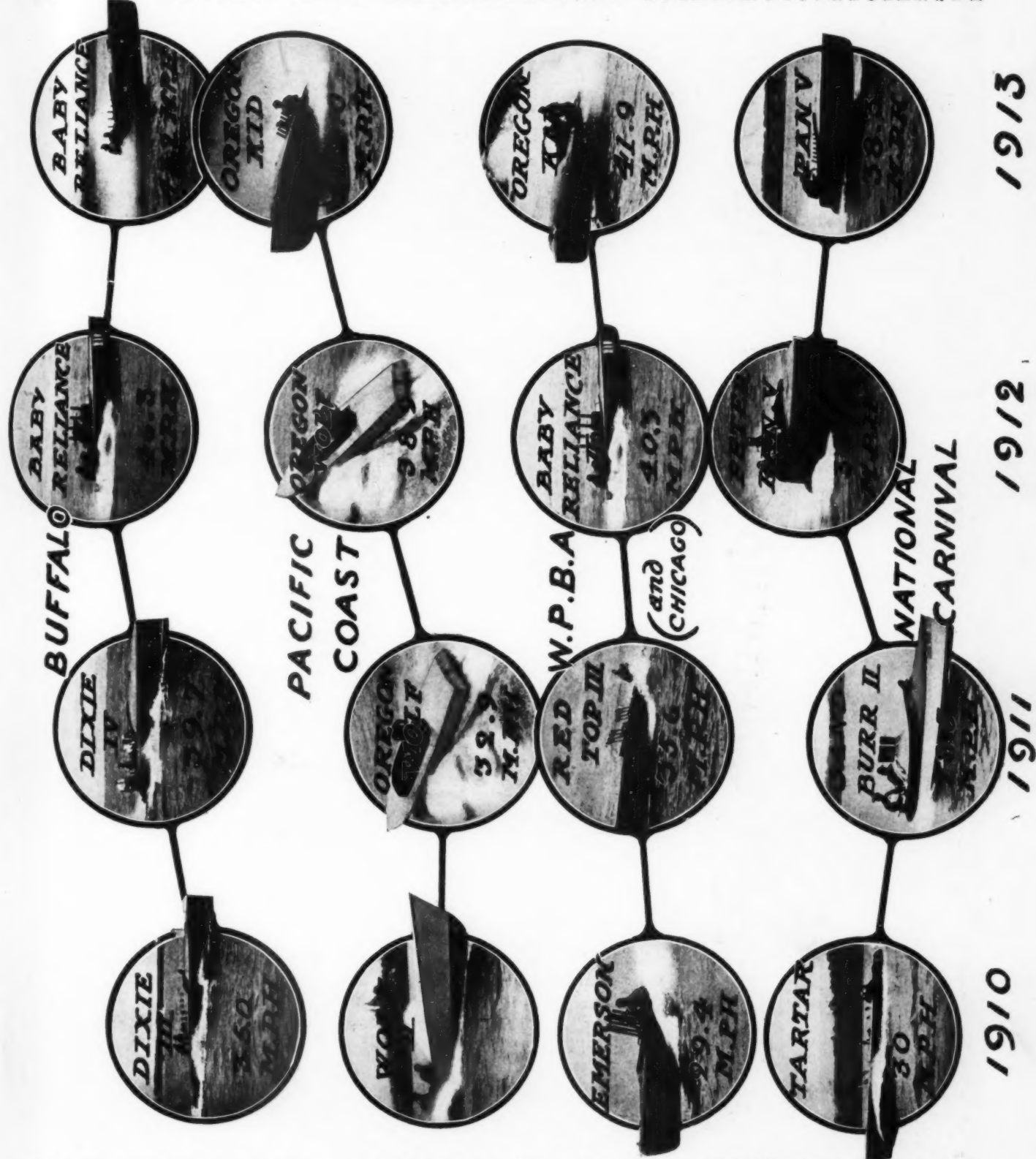
On these two pages, we have traced the speed progress for four years, going back to 1910, when the hydroplane was a very uncertain quantity, but was just beginning to appear, experimentally at least. We show the picture of the winning boat in the particular race or series of races in question, and her average speed from the starting to the finish line. In every instance this is not necessarily the fastest boat which took part or the boat which made the fastest lap, but it is the average speed of the winner. Where a number of heats were held to decide a title, then the fastest heat of the winner is taken as a basis of determining the speed of the

the same for the Chicago Meet.

Also in the record of the Great Lakes Events, while it is true that Kitty Hawk V did do one lap of her race at Toledo faster than any other boat, yet her average speed for her whole race was slower than Baby Reliance averaged in one of her entire races, which entitles Baby Reliance to the title in our system of scoring.

The same was true at the Gold Cup race in 1911. Baby Reliance here won two heats at a much better speed than the winner of the cup, P. D. Q. II, was able to average in any of the three races, but the former failed in one heat to such an extent that the cup went to P. D. Q. II.

Similarly we might cite numerous examples where rumor had it that this boat went fifty, sixty or seventy miles per hour, more or less, or that one had done some other speed in an unofficial trial, and while we are not presuming to doubt these in the least, yet everyone will agree that there must be some basis to start from in a case like this, and some standard to follow, which explains our method.





The table below shows at a glance the particulars of all the prominent racing events of 1913, in both the speed and cruiser branches of the sport. It includes a comparison of each speed event with the corresponding event of 1911 and 1912.

Besides the records made, the table below gives the complete specifications of both hull and power plant of each winning boat, making it a most complete and valuable record of the past season, both historically and in the matter of efficiency in design.

# The Championship Races of 1913.

The Winning Boats. Their Engine and Hull Specifications.

## The Speed Boat Events and Their Winners.

Event	Length of Race, Miles	Name of Boat	Owner	Elapsed Time	Waterline Length	Waterline Beam	Make of Engine	No. of Cyl.	Bore & Stroke	Winner's Speed Per Hour	Winner's Race 1911	Winner's Race 1912
Mississippi Valley—Class B.....	10	P.D.Q. III	A. C. Strong	24:54	32:04	14	Single Step	Wisconsin Valveless	27 3	4 1/2 x 4 1/2	26.2	27.5
Mississippi Valley—Class C.....	15	Little Landing Lady	W. P. Cleveland	32:04	32:04	14	Single Step	Emerson	100 6	5 x 5	34.3	35.8
Mississippi Valley—Class D.....	15	Oregon Kid	S. F. Brock	24:19	26:50	20	Single Step	Van Blerck	125 6	5 1/2 x 6	37.0	38.8
Mississippi Valley—Class E.....	20	Oregon Kid	S. F. Brock	26:50	26:50	20	Single Step	Van Blerck	125 6	5 1/2 x 6	34.8	32.0
W. P. B. A. 26' Finals (Chicago).....	12	Baby Speed Demon	J. S. Blackton	17:32	17:32	20	Single Step	Sterling	180 8	5 1/2 x 6 1/2	41.1	40.3+
W. P. B. A. 32' Finals (Chicago).....	12	Oregon Kid	M. Smith	18:34	18:34	20	Single Step	Van Blerck	125 8	5 1/2 x 6 1/2	38.9	37.7
W. P. B. A. 20' Finals (Chicago).....	12	Baby Speed Demon	J. S. Blackton	17:51	17:51	20	Single Step	Sterling	180 8	5 1/2 x 6 1/2	40.3+	35.6
Wrigley Championship.....	12	Disturber III	J. A. Pugh	43:47	43:47	40	5-Step	2—Van Blercks	600 24	5 1/2 x 6	42.0	38.5+
Gold Challenge Cup.....	20*	Ankle Deep	C. Mankowski	44:59c	44:59c	32	Single Step	2—Sterlings	300 16	5 1/2 x 6 1/2	44.5	35.8
Great Lakes Championship.....	30	Kitty Hawk V	H. H. Tinken	41:20	41:20	26	Single Step	Van Blerck	300 12	5 1/2 x 6	43.6	35.3
Class A—National Carnival (Handicap).....	21	Red Devil	O. P. DeMars	56:10c	56:10c	26	Displacement	Loew-Victor	40 4	4 1/2 x 5 1/2	22.4	25.3
Class B—National Carnival.....	21	Chinook	C. B. Lockwood	1:08:15c	1:08:15c	41	Displacement	Scrapps	50 6	5 1/2 x 6	18.5	24.5
Class C—National Carnival.....	30	Peter Pan V	J. Simpson	47:00c	47:00c	20	Single Step	Van Blerck	180 8	5 1/2 x 6	38.3	28.5
British International—1st Race.....	32.4	Despujols II	M. Morris Coulumb	41:34	41:34	26	Single Step	Despujols	400 6	5 x 10	46.7	40.5
British International—2nd Race.....	32.4	Maple Leaf IV	E. M. Edgar	39:28	39:28	40	5-Step	2—Austins	760 24	7 1/2 x 7	49.2	38.5
British International—3rd Race.....	32.4	Maple Leaf IV	E. M. Edgar	40:10	40:10	40	5-Step	2—Austins	760 24	7 1/2 x 7	48.13	43.3
Pacific, Free-for-All.....	30	Oregon Kid	M. Smith	46:49c	46:49c	20	Single Step	Van Blerck	125 6	5 1/2 x 6	38.40	32.9
Pacific—20' Class.....	10	Oregon Kid	M. Smith	13:38	13:38	20	Single Step	Van Blerck	125 6	5 1/2 x 6	43.0	32.3
Buffalo—First Day.....	26.3	Baby Speed Demon	J. S. Blackton	39:07	39:07	20	Single Step	Sterling	150 8	5 1/2 x 6 1/2	40.4	45.5
Buffalo—Second Day.....	33.6	Baby Reliance	J. S. Blackton	46:43	46:43	20	Single Step	Sterling	150 8	5 1/2 x 6 1/2	43.2	39.7
Buffalo—Third Day.....	36	Haida Papoose	M. Fleischman	51:30	51:30	20	Single Step	Sterling	180 8	5 1/2 x 6 1/2	42.0	46.3
Miss. Valley Statute Mile Dash.....	1	Oregon Kid	M. Smith	1:15	1:15	20	Single Step	Van Blerck	125 6	5 1/2 x 6	48.0	53.7

## Cruiser Handicap Events of Over 100 Miles in Length.

Event	Length of Race	Name of Boat	Owner	Elapsed Time	Waterline Length	Waterline Beam	Make of Engine	No. of Cyl.	Bore & Stroke	Name	Owner	Elapsed Time, 1913	Elapsed Time, 1912
New York-Albany (A. P. B. A.).....	235*	Blue Peter V	A. Nachmann	23:55:31	39:8 1/2	8 1/2	Holmes	4	6 x 8 1/2	Blue Peter V	A. Nachmann	23:55:31	27:35:25
New York-Brock Island (Viking).....	100*	Thistle	J. H. Wallace	11:21:41	37:0	7-1	Sterling	4	4 1/2 x 6	Blue Peter V	National	10:30:00	10:45:00
Philadelphia-Bermuda.....	734*	Dream	C. L. Lagen	98:42:00	39:08	8.83	Standard	2	6 x 8	Barbara II	W. M. Duncan	85:55:20	104:29:05
New York-Cornfield Lt. Ship.....	183*	Frances H.	G. W. Hoertel	21:47:11	37.5	8.95	Standard	3	6 x 8	Frances H.	G. W. Hoertel	21:47:11	20:40:50
National Carnival Cruisers.....	26	Barbara II	P. C. Jones	2:24:40c	48.33	10.4	Ralaco	4	7 x 9	Barbara II	P. C. Jones	2:24:40	1:27:57
Delaware River.....	178*	Haji	H. J. Dudley	20:58:54	39:08	8.83	Sterling	4	4 1/2 x 5 1/2	Marguerite II	A. B. Cartledge	17:26:42	(1)
Yachtmen's Club-Ocean.....	202*	Dream	C. L. Lagen	26:04:03	39:08	8.83	Standard	2	6 x 8	Toccam	J. W. Mulford	24:01:33	(1)
Cheapeake Bay.....	161*	Almex II	J. Mayer	18:36:40	60.5	11.25	Sterling	6	6 1/2 x 9	Marguerite II	A. B. Cartledge	15:19:00	(1)
Pacific Long Distance.....	111*	Kathleen III	G. E. Williamson	11:20:00	60.5	11.25	Sterling	6	6 1/2 x 9	Kathleen III	G. E. Williamson	11:20:00	(1)

Note: \* indicates best time in heat races is shown; \* indicates nautical miles; (1) indicates length of course not the same in 1911.



# Racing on the Schuylkill.

A Number of Successful Events Held on Commodore's Day Which Marks the Close of the Season in This Section.

Photographs by Joseph N. Pearce.



Chelsea II, winner of many events this summer in Delaware and South Jersey Waters.



A. F. B., Atlantic City Yacht Club, second in twenty-four mile race.

**K** EEN rivalry has existed all season between the owners of Tech Jr., of the Wilmington Yacht Club, and A. F. B., of the Atlantic City Yacht Club, and, as a result, both entered the last race of the season prepared to exert every ounce of energy toward accomplishing the defeat of the other, irrespective of the other contestants. In fact, the pace which these two boats set from the very beginning, in the twenty-four nautical mile race, held by the Norristown Motor Boat Club, October 4th, on the Schuylkill, was so fast that the other four hydroplanes competing in the same class were compelled to

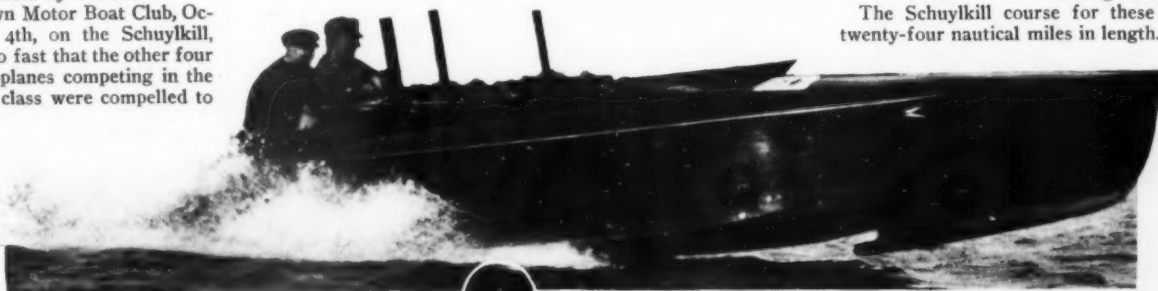
drop out of the race even before the finish line was in sight.

Mr. Alfred E. Burk, owner of A. F. B., was at the wheel of his racer when he last met Tech Jr. at the Cape May Corinthian races on August 30th, and at this event he defeated his opponent by a narrow margin. Tech Jr. got back her lost laurels at the Norristown event, and the score is now even. She won in the face of extreme difficulties, as she was obliged to finish the last two miles with her gasoline supply pipe broken off, and the two ends held together by the engineer.

The Schuylkill course for these races was twenty-four nautical miles in length.

NAME	No.	CLUB	CLASS	RATING	ALLOW- ANCE	ELAPSED	COR- RECTED	PO- SITION
Nancy	1	Belmont Y. C.	D	71.1	22.12	1:33:26	1:11:14	3
Pee Vee Ho	2	Norristown M. B. C.	H	71.57	21.38	Out on fourth lap		
Delphia II	3	Bridesburg Y. C.	H	73.20	19.46	Out on first lap		
Rocallana	4	Flat Rock M. B. C.	D	74.46	18.23	Did not start		
XOOME	5	Flat Rock M. B. C.	D	81.5	11.26	1:06:09	54:43	1
Wm. S. Vane	6	Camden M. B. C.	D	82.1	10.54	1:11:53	1:00:58	2
Alpamel III	7	Keystone Y. C.	H	82.25	10.46	Out on fourth lap		
A. F. B.	8	Atlantic City Y. C.	H	82.8	10.17	52:51	42:34	2
Tech, Jr.	9	Wilmington Y. C.	H	89.64	4.46	46:56	42:10	1
Chelsea II	10	Atlantic City Y. C.	H	96.48	0.00	Out on fourth lap		

In the mile trials, with and against the tide, Chelsea II averaged 38.33 miles an hour, and Tech, Jr., 42.61. XOOME took first prize on corrected time in the displacement class and also the prize for the best elapsed time in the same class, while the prize for the most consistent running went to Nancy.



Tech Jr., winner in the time trial and twenty-four mile race.



Pee Vee Ho Norristown Motor Boat Club, which withdrew after competing three and a half laps.



The common bell buoy marking some obstruction to navigation and actuated by the motion of the water.

**W**HILE it is by all means best to be guided by a harbor chart when running any of the inside waters, it is nevertheless quite possible to enter any of the territorial waters of the United States upon the information furnished by the cons, buoys, other aids to the form or coloring on which

mation lights, bea-daymarks and navigation alone, or of each indication it is to be



Ambrose Channel combination gas and bell buoy immediately after being lowered from the tender.

# CHANNEL DANGER

How the United States Government gation. The Various Types of Buoys,

By William

passed and in this way giving the course on to the next one. Lighthouses, for example, are all of different shapes and colors, so that they may be identified in daylight as well as during the hours when each is showing its characteristic fixed light or flashes, though it is not infrequently the case that a lighthouse throws a red light



Placing the lens in a gas buoy. These lenses alone cost over eleven hundred dollars.

over an arc of the horizon between the bearings on which it is dangerous to approach. While running across such red sectors the navigator must be guided strictly by the chart or buoys in order not to close in too much upon the danger.

The entrances to most of the important bays and harbors are especially favored by the presence of light-vessels permanently moored in the offing and showing one or more lights, usually flashing out some particular number. By day these floating lighthouses are recognized by cages or other shapes carried at the mastheads, and by a number, and in many cases even the name, painted in large characters on the hull sides.

In entering a harbor from the ocean, whether by day or night, one may proceed with confidence after having once identified the lighthouse or light-vessel that marks the entrance, but until this is done there is no precaution too elaborate to be observed. In thick weather one may find the channel by running slowly toward the fog signal sounded by the lightship, until either it or the channel buoys are picked up; and in general it will be found that this class of aids to navigation are serviceable in some phase or other under any and all conditions.

The general scheme of buoying harbors is remarkably uniform



# MARKS and SIGNALS

Provides and Maintains These Aids to Navigation  
What They Mean and How They are Cared For.

C. Ward.

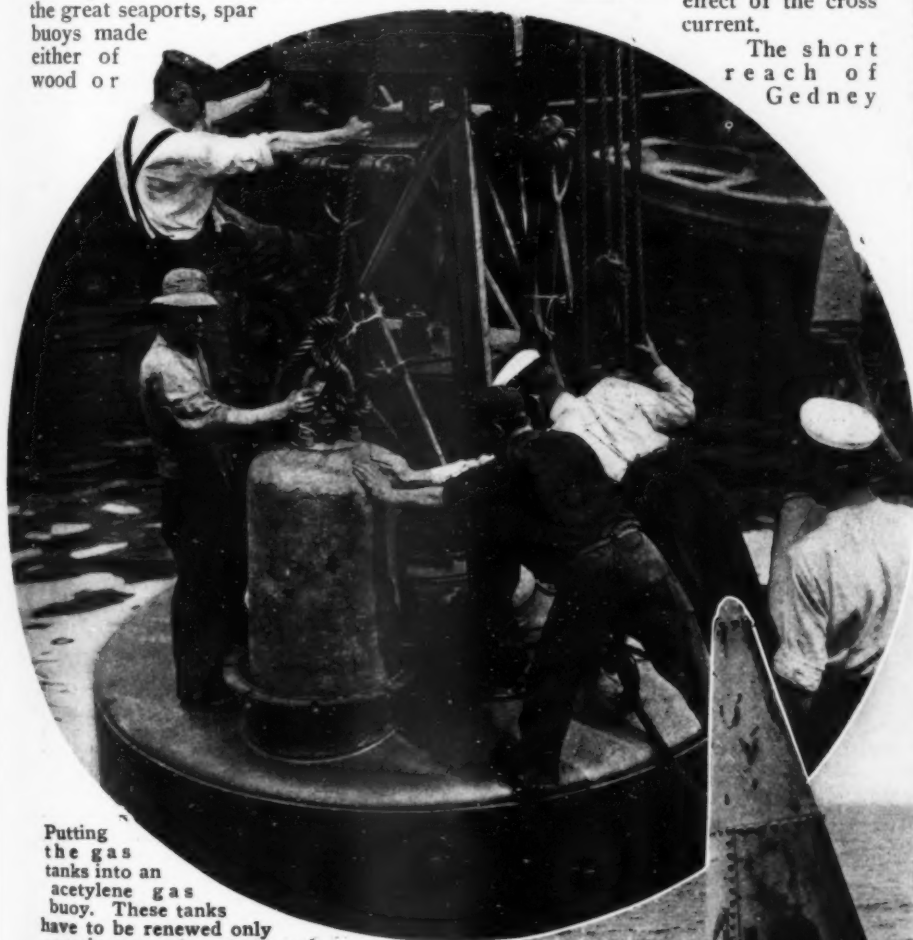
throughout the country, so that once having the plan fixed in the mind, one need bother about little else than the meaning of the different kinds of buoys that will be fallen in with. Usually there is a straightaway course from the light-vessel to a whistler or some other type of mid-channel buoy which marks the entrance to a long lane of deep water, on the starboard side of which is a row of red conical or nun buoys bearing even numbers, and on the port side is a similar row of black can buoys designated by odd numbers. In the smaller and less important harbors, and in some of the minor channels of the great seaports, spar buoys made either of wood or

paint the buoys with black and white vertical stripes, so that wherever a buoy is seen having this characteristic it will be known at once that there is no obstruction ahead in the immediate vicinity.

Having once made the entrance of a harbor, there is no trick to running the other than keeping the line of red buoys aboard on the starboard hand as long of deep water is straight, being guided distance from the side of the channel of the tide. On this important the buoys give all the information and the set and drift of the tidal at different places in the channel cated very nicely by the direction the buoys "watch" and the wake leave. With the tide running the channel, then, from port board, a vessel would naturally favor the black-buoyed side in entering the harbor to neutralize the effect of the cross current.

The short reach of Gedney

tical stripes, this character is no danger vicinity. buoyed harbor rather close as the lane as to the by the state point, too, necessary, current is indicated in which they across to star-



Putting the gas tanks into an acetylene gas buoy. These tanks have to be renewed only once in every six months and sometimes at even greater intervals.

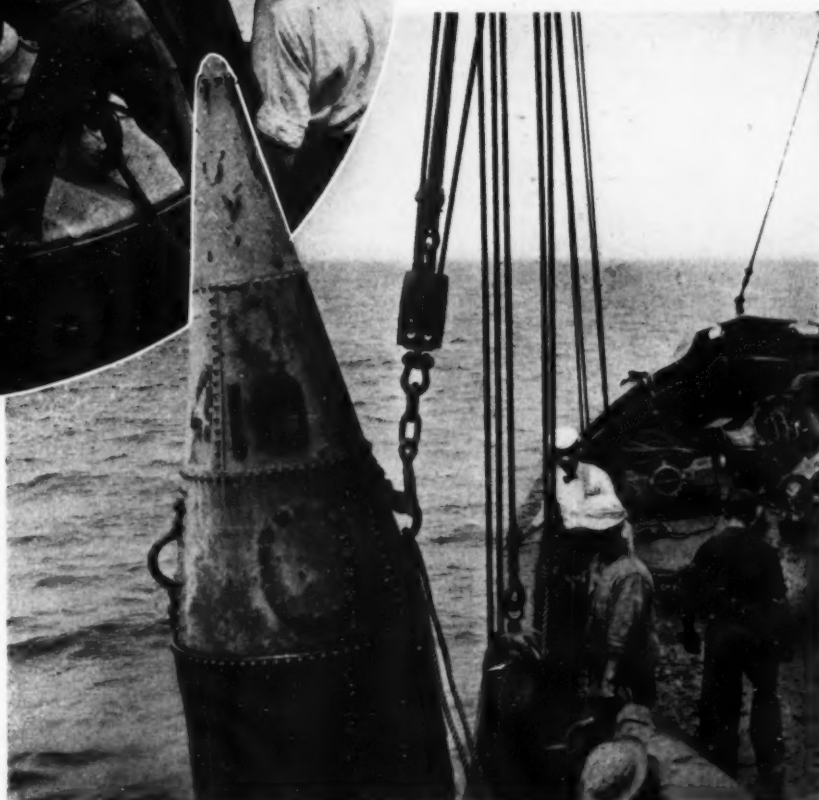
iron are used to mark the fairway instead of cans and nuns, but their colors and numbers invariably follow the same rule.

The entrances of the more important channels are generally buoyed very elaborately. It is by no means uncommon to see such places marked by a whistler which announces its presence by emitting a grunt every time it settles on the back of a passing sea, a gas buoy showing either a fixed or flashing light at night and a platform bell buoy which rings its warning to the passing vessel. Surely nobody could either enter or leave such a channel without knowing it, no matter what the state of the weather. Wherever the entrances and middles of channels are marked in this manner it is customary to



A nun buoy with cage as a distinguishing day mark. The knives near the top of the buoy are intended to cut hawsers which foul the buoy.

Channel, the entrance to New York Lower Bay, has, beside the usual gas and whistling buoys to mark its entrance, (Continued on page 64)



Raising a nun buoy aboard the light-house tender for inspection and repairs. Note the size of the buoy compared with the men along side.

# The Motor Yacht's Chronometer

The Importance of the Time Piece in Locating One's Position When at Sea.  
Its Application in the Determination of Longitude.

SINCE the go-footer became a fact, and real ocean cruising is done to a greater and greater extent, motor boatmen have paid more attention to the practice of real navigation than ever before.

Upon the chronometer all longitude depends, since longitude is really only the difference in time between the standard meridian and the place where the vessel happens to be. If you carry Greenwich mean time on the chronometer, and can get your own time from the heavens with a sextant, finding the longitude consists simply of taking the difference between them.

Chronometers are of several makes and types, from a small one designed especially for use on yachts, to one of the more elaborate ones used on large vessels. The instrument comes in a stout case lined with padded fear-naught, and is mounted on brass gimbals in the same manner as is the compass bowl. No opening is provided in the chronometer body itself, except for the insertion of the key, for such delicate instruments are not fool-proof, and the average man who wants to "see the wheels go 'round'" is very apt to see them stop.

As the absolute regularity of the chronometer is essential for the correct determination of the ship's position, it is of greatest importance that every precaution be taken to insure the accuracy of its indications at all times. Of course, the instrument has an expansion balance, and the main spring is provided with a variable lever, which makes its action as constant as human mechanical skill can render it, but chronometers will get out of whack every once in a while, and the only way to guard against trouble of this kind is to carry three of them. Then when one goes wrong its error is revealed by the other two.

The care of a ship's chronometer is one of the most important duties of the officer having charge of it. The box in which it is stowed should be firmly fastened in a place as near the center of motion of the vessel as possible, but not where it will be subjected to jars from the machinery, and not near any vertical iron, which would magnetize it. The windings must be performed at the same hour each morning, and, although most chronometers are built to run 36 hours, one should never be permitted to run over 24 without re-winding. The number of hours it has gone unwound can always be told at a glance from the reading of a little dial on the face of the instrument.

Since it is impossible to build an instrument that will run with absolute regularity under the disturbing conditions incident to a sea voyage, the error of the chronometer on Greenwich mean time, and its variable rate must be carefully watched. The error is the difference, at any time, between the reading and the time it is supposed to keep. The rate is the daily variation of this error. Suppose that a chronometer is 3 min. 20 sec. slow one day, and the next day it is found to be 3 min. 22.5 sec. slow. That instrument has lost 2.5 seconds, which is its rate for the time being, and, unless actual observations indicated otherwise, 2.5 sec. would be added to its error the next day, the same amount the next, and so on.

Now, about the determination of this error and rate. There are two methods in common use: One is by comparison with the drop of a time ball, and the other by getting the noon tick sent out by the United States Naval Ob-

servatory over all the telegraph wires in the United States. The nautical instrument stores also have a wire which gets the noon signal, and a dozen or so shipmasters can usually be found there every day, with their hack-watches, laying for the tick. They then go back to their ships as fast as they can get there, and see how their watches agree with their chronometers.

Suppose it to be in New York, where 75th meridian time is kept, which is five hours west of Greenwich. Now, if the watch read 11 hrs., 45 min., 10 sec. when the tick came, the

nometer would be an impossibility, for, since longitude is the difference in time between Greenwich and wherever the vessel is, Greenwich time must be on hand to compare with the local time gotten by solving the astronomical triangle from an altitude taken with the sextant.

The time at any place is noon when a fictitious body called the mean sun is exactly on the meridian. This is so for two reasons: The real sun moves in the ecliptic and not in the celestial equator, and his motion there is not uniform. The ecliptic is a great circle of the celestial sphere inclined  $23^{\circ} 27'$  to the celestial equator. The imaginary mean sun is conceived as a body moving in the equator at a uniform velocity equal to the mean velocity of the true sun in the ecliptic. At the equinoxes, where the ecliptic and equator cross, mean time and apparent time coincide; at other points they vary considerably, and this difference is called the equation of time, with which mean and apparent times are interconvertible at any moment by reference to the tables in the nautical almanac.

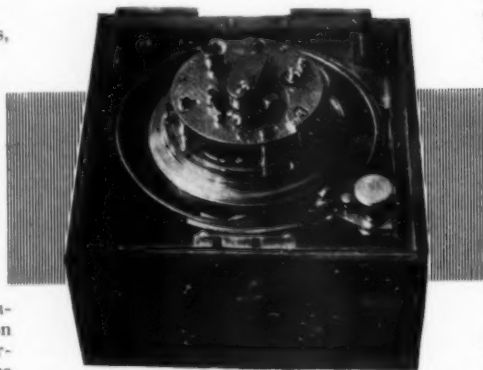
In working out the longitude by an altitude of the sun—that is, a "time sight"—we cannot see this mean sun, and the hour angle, with which we determine our local time for comparison with Greenwich mean time, has to be converted into mean time. For this purpose, the equation of time is used. It is taken from the nautical almanac and corrected for chronometer time in the same manner as for declination in the determination of latitude, for every element in the ephemeris is computed for Greenwich mean time, which we can always get from the chronometer.

The corrections for the observed altitude are, of course, the same as those for the latitude sights, for what is wanted is a correct geocentric altitude of the sun for use in solving the astronomical triangle. The function of the chronometer in determining the longitude can be readily seen from the following example: The observer, with an assistant armed with a watch, stands by, sextant in hand, around eight o'clock in the morning, or four in the afternoon, and takes three or five altitudes, calling out "mark" each time he makes the sun's rim touch the horizon.

If the longitude is accurately known, as it would be ashore, or in a well-charted harbor, the time sight can be used to find the chronometer error, for a comparison of the longitude with the chronometer reading should give the known longitude as an answer.

There are other uses of the chronometer for finding the local time, or longitude, which amounts to the same thing, such as the method of equal altitudes, and that of lunar distances. The latter consists of having three observers to measure simultaneously the angle between the moon and one of the stars, the altitude of the moon and the altitude of the stars. It requires an inconvenient number of observers, and the working-out of the result is very complicated and tedious. The method is rarely used to-day, except to get a very accurate chronometer rating the night before making land, so that the navigator can feel sure of fetching up exactly where he wants to go.

The method of equal altitudes is a very convenient and simple one, and consists simply of taking a series of timed altitudes before the meridian passage, when the sun or star will be rising, and then setting his sextant successively to the same altitudes after the meridian passage, when the altitude will be decreasing, and marking the time each time one of his altitudes occur. The problem resolves itself into a simple



The works inverted, showing the delicate balance mechanism.

watch error was 14 min., 50 sec. Upon returning to the ship, this condition of affairs is found:

Chronometer	...17h.	28m.	30s.
Watch	.....11h.	50m.	20s.
C-W	.....5h.	38m.	10s.
Watch slow	....	14m.	50s.
C. time of noon	5h.	53m.	00s.
Longitude	.....5h.	00m.	00s. (75th meridian time)
		53m.	00s.

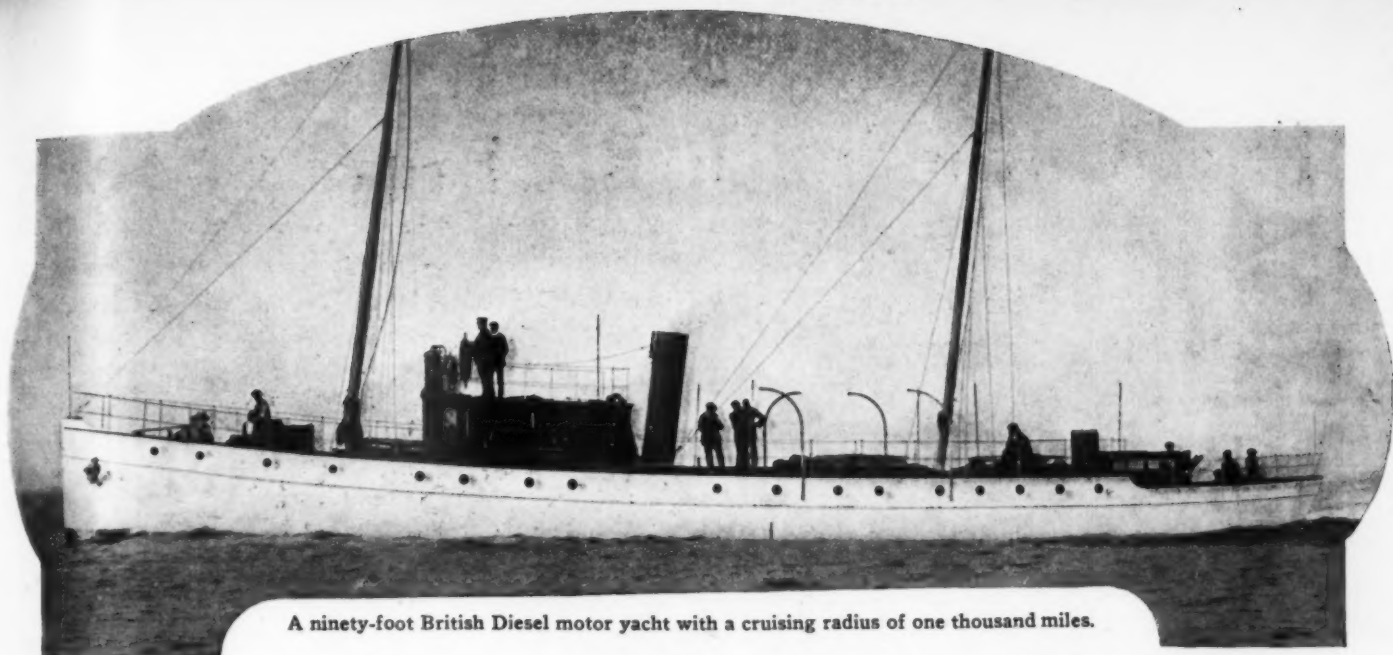
So much for the chronometer itself; now.



The standard Negus chronometer in its permanent case. Instruments of this kind are as accurate as human skill permits.

for its uses at sea. The determination of longitude at sea without the use of a good chro-





A ninety-foot British Diesel motor yacht with a cruising radius of one thousand miles.

## Diesel Powered Motor Yachts.

**An American Built Eighty-Four Footer with 150 H. P. and a Twin Screw British Ninety-Footer Motor Yacht with 300 H. P. An Interesting Comparison of Their Power Plants.**

**I**N THE case of the twin-screw Diesel motor yacht just completed for Mr. Lee White, only 15 foot out of her 95-foot length is taken up by the engine-room, which, in addition to two 300-h.p. main engines, contains two separate motor-driven lighting and air-compressing sets. With both engines running she has a speed of 13 knots, which she can maintain for 1,000 miles without replenishing her fuel tanks. Here at once is apparent an enormous advantage over the steam system of propulsion, as the amount of fuel required is only six tons, two-thirds of which is stored below the engine-room floor. At 10 knots speed the maximum cruising range is 1,500 miles.

The hull is of steel construction with a displacement of 90 tons, and is divided by transverse bulkheads into six watertight compartments. There are two main propelling Diesel engines driving twin screws, and each is of the six-cylinder, White-M. A. N. type. The bore of the cylinders is 7", which enables the engine to give the full 150 b.h.p. at 500 revolutions.

Before being installed in the vessel the engines were subjected to eight hours trial in the shop, using Texas oil fuel. Both engines started promptly from cold on compressed air at 500 lb. Revolutions were maintained at 500 per minute, the power being absorbed by a reversible water brake. The accidental failure of the water supply to this brake, allowing the engine to

race, caused the gunmetal lever of one scavenge valve to fracture, the governor not having been adjusted. This put one cylinder out of action. It would have been quite possible to have continued the running on five cylinders. It was decided, however, to replace the lever by one from another engine, which involved the stoppage of five minutes, and five minutes were added to the running time at the end of the trial to complete the eight hours of actual running and for the records of fuel consumption. The gunmetal levers have since been replaced by steel ones. The mean power obtained for the eight hours' run was 154.88 b.h.p. on a total fuel consumption of 6 cwt. 110 lbs. or 0.675 lbs. per b.h.p. hour, and the lubricating oil consumption worked out at 0.047 lbs. per b.h.p. per hour. The indicated horsepower was 228. The mean temperatures of the cooling water and lubricating oil were 127.5 degrees Fahr. and 155 degrees Fahr. after passing through the engine.

The mean results for the other motor for the eight hours are: Brake horse power, 154.75; indicated horse power, 228; fuel per b.h.p. per hour, 631 lb.; lubricating oil per b.h.p. per hour, .040 lb. At the end of the eight hours' trial the starboard engine was run for half-an-hour overloaded, power developed being 170 b.h.p. to 175 b.h.p., and the 550 per minute. Trials were made with the port en-

possibility of starting the engine with air-compressors below normal. The starting and injection receivers were connected and blown down until there was a pressure in each of 425-lb. per square inch. The starting reservoirs were then shut off. The normal starting pressure is 650 lb. per square inch and the blast about 900 to 1,000 lb. per square inch. The fuel consumption is considerably higher than is usually the case with Diesel engines, but the economy is still vastly better than steam machinery of the same power.

The engine was started and kept running for a few minutes until a blast pressure of 700 lb. was obtained, and was then stopped and reversed sixteen times in rather less than five minutes. The engine failed to start only when the pressures had fallen to 160 lb. in the starting reservoir, and 700 lb. in the blast receiver. By allowing air from the blast receiver to pass into the starting receivers until the pressures were 450 and 220 lb., respectively, the engine was again started. This is a most interesting point, as it shows that even if all the starting air is gone it is still possible to start the engine in case of an emergency.

The total weight of the machinery and accessories is 15 tons. This includes an auxiliary air compressor and circulating pump, an auxiliary dynamo and lubricating pump; also shafting and propellers. Two fuel tanks are in the engine.

(Continued on page 62)



**Idealia, an Elco cruiser with 150 h. p. Diesel.**

# A TWIN SCREW MOTOR HOUSEBOAT

**A** HOUSEBOAT which will attract favorable attention in Florida this winter is *Alcla*, built by the Mathis Yacht Building Co., Camden, N. J., for Mr. Albert H. Disston. Her dimensions are 70' x 16' 8", and she is powered with two 40-60, six-cylinder Standard engines driving 32" x 40" propellers of the same make. Although she is at present fitted with a single rudder amidships, before going to Florida this winter she will carry a pair. Suitably disposed on either side, as it has been found that, owing to her shallow draft of 27", she does not answer the helm promptly enough when under reduced headway. The seeming discrepancy of her 32"-diameter propellers, and a draft of five inches less is accounted for by the fact that her design

the forward bulkhead. This room is lighted by two ports on either side. A triangular compartment in the extreme bow is devoted to fresh water tanks and chain locker, access being had to it through a hatch in the deck above.

Aft of the living-room, the galley, 5'7" x 15', is fitted with a large range and an ice box—the latter having removable partitions for the reception of ice in large

units—two sinks, two dressers and ample shelving. On the starboard side, adjoining the range and receiving its coal through the same hatch in the floor, is the hot-water furnace supplying heat for the boat. The engine-room and crew's quarters occupy the remaining space aft. Throughout its central area the en-

Between the deckhouse and the bridge there is a large deck room.

As a pair of propellers are fitted



The bridge deck fittings are complete and admirably arranged.

The music room is an inviting place in all weathers.

includes a tunnel stern in which her shafts revolve. With the exception of engine-room, galley and crew's quarters, Alela is finished throughout in mahogany, the girdered ceilings and side walls above the wainscot being cream white. The engine-room and galley are done with lead base and white top, while the crew's quarters are in yellow pine, natural finish. The dining and living-room or main saloon, which is situated exactly amidships, extends the full width of the boat, and is 11' 9" long by 15' 2" broad. A seat with lockers beneath it extends the full length of the room on the port side, with a five-foot angle against the forward bulkhead. The dining table is provided with a seven-foot extension. A sideboard is centered at the after end, and the doorway leading into the galley is on the starboard side. This room is upholstered and draped in green.

Forward of the main saloon, and symmetrically disposed on either side of a passageway, are two double staterooms, 6' x 9', provided with washstands, bureaus and four-foot double berths, each room receiving ample light from a brace of two-foot windows. A single stateroom illuminated by ports and provided with bureau, washstand and thirty-inch berth, is situated immediately forward of the double stateroom on the port side, and the corresponding area on the starboard side is given over to a well-appointed bath, a separate toilet and a linen-locker. The passageway terminates at the bow in a commodious stateroom 7' 7" in depth and varying from 7' to 12' in width, with a thirty-inch berth on either side and a centrally located bureau placed against

the engine-room has a depth of 9', this being extended to 13' 2" on the port side which embraces the approach to the companionway and crew's quarters. The captain's room with washstand, lockers, bureau, seat and hinged pipe berth lies to starboard of the engine-room to which it is directly connected by a door. There is a Pullman berth for the engineer hung over the engines, and the rest of the engine-room equipment comprises a generating plant and a work bench on the port side.

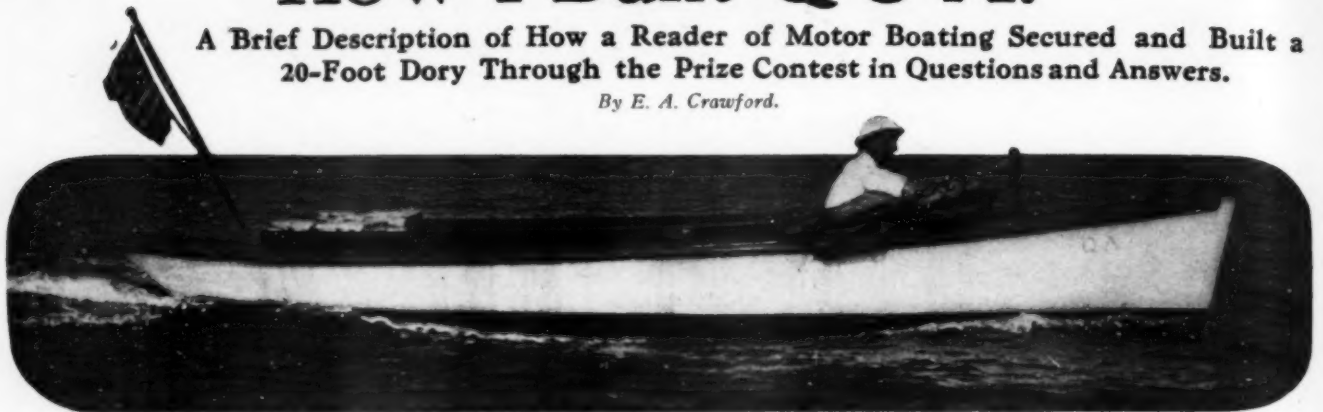
The crew's quarters extend 4' into the central portion of the engine-room and aft 10' 9" from this point, being reduced to 7' 6" in width to provide deck room for crew on either side as well as astern. The crew's compartment is provided with two six-foot upholstered berths, one on either side, with hinged pipe berths over, bringing the berthing capacity to eight, and leaving two spare berths with the full complement of six aboard. A dining table is situated on the center line at the extreme after end of the room between the seats.

Above decks, also, the arrangements are appealing. The bridge deck design is peculiar to Mathis-built boats, the wheel, controls, horn, binnacle, chart and search light all being within easy reach of the navigator whether he is standing or seated. There is a chart locker at the left and a flag locker at the right. The deck-house or music-room is of mahogany and is interiorly finished with olive green window drapery, and Oriental rugs laid over a composition floor covering. The furnishings include a piano forward, a Victrola and record cabinet, folding table and lounging chairs.

# How I Built Q & A.

A Brief Description of How a Reader of Motor Boating Secured and Built a 20-Foot Dory Through the Prize Contest in Questions and Answers.

By E. A. Crawford.



Q & A is 20 feet long with a beam of 4' 8", and was built from knock down material of the Monitor Boat Co.

**B**ELIEVING that it might interest readers of this publication to know how another motor boat was added to the rapidly-growing fleet, with the expenditure of but very little hard cash, I shall try to describe the methods by which I obtained Q & A (Questions and Answers).

Always being a lover of the water, and in fact having earned my living for several years before the mast, I naturally had the craving deep down in my system to become the proud owner of my own boat. Several years ago a copy of *MoToR BoatinG* fell under my observation; to be explicit, I believe it was shortly after the present proprietors took charge and started the Questions and Answers. The first copy interested me by the off-hand way readers were invited to subscribe—"just fold up a dollar bill and enclose in an envelope at our risk"—which I immediately proceeded to do. Scanning the pages, I came to the contest department of Questions & Answers, an innovation which struck my fancy at once as the best ever. Here was an idea that should prove a winner, as it opened up a way for the knowledge seeker to have a question discussed by interested and expert readers all over the country out of their knowledge and practical experience, something never possible before.

In reading the answers the thought struck me that if "so and so" could receive a prize for his answer, why couldn't I do the same, and I immediately

got busy and have been so ever since.

At first I did not meet with very much success, but after repeated trials now and then I would be fortunate and receive a prize or at least a check which was stowed away toward the boat I was going to own some day. Last spring two prizes came along about the same time, and, figuring up the amount on hand, I concluded that it was time to start in. After considerable perusing of catalogues on knock-down boats, such as I could afford to purchase, I concluded to accept the invitation of the Monitor Company to visit their factory and inspect their system. In truth, I was a little "scary" of the knock-down proposition, but after a pleasant afternoon spent in their plant, I came away perfectly satisfied that I could get just what I wanted right there. One feature that impressed me was that the frames of all the boats they had under construction were of the finest white oak and, knowing how difficult it is to procure a good quality of oak in local lumber yards, I concluded that this in itself was enough to induce me to purchase there. Another fact that influenced me was that while they have models of their own, they will gladly make any al-

terations which you may suggest. This settled the question of the boat and I notified the editor of my desire, forwarding the difference in price, with the request that he order same for me.

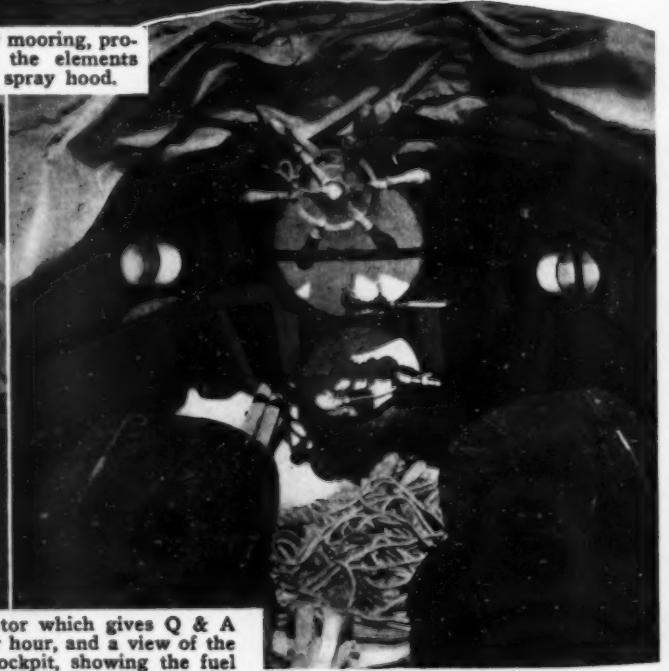
The engine was the next consideration and, I might state, a perplexing one, for when you begin to pick out what you consider the best for the money in marine engines you tackle a serious and complicated task. However, I selected a three-horse Gray, after much deliberation, from the following facts: First, because it has a jump-spark ignition; secondly, because it is medium priced, and, thirdly, because it is manufactured by a large and responsible company, who will be in business for years to come, where extra parts may be promptly obtained when required without any unnecessary trouble or delay. A single-cylinder model also seemed well suited.

Not being able to secure a suitable place near at hand where I could build her under cover, I decided to set her up in the back yard, using a canvas cover to protect her. The frames, keel, planking, etc., arrived on a Saturday afternoon and next morning my brother and I began work. By night we had the frames all in place trued up, secured and given a coat of red lead.

From then on the work progressed more slowly, as it was only possible for us to find time to work on her  
(Continued on page 60)



Q & A at her mooring, protected from the elements by a khaki spray hood.



The 3 h. p. Gray motor which gives Q & A a speed of 8 miles per hour, and a view of the forward end of the cockpit, showing the fuel and whistle tanks.



# New Motor Boats

## A Cruiser of Roomy Design.

Combining Handsome Outboard Appearance with Wide Beam and Ample Accommodations Below. Her Hull is Divided into Five Watertight Compartments, Making Her Practically Unsinkable.

THE accompanying plans show one of the latest Bowes & Mower designs for a 48' 6" overall cruising motor boat. The design is an exceptional one from many points, and was made for a Western yachtsman, for use in the vicinity of Milwaukee, and for extended cruises on the Fox River. While this boat has a great deal of beam and exceptionally large accommodations, an extremely handsome outboard appearance has been obtained without sacrificing any of the essential features in any way. This design is the result of the unusually large experience which this firm has gained in designing, building and handling able, comfortable cruising boats of shoal draft, and it is hard to see how a boat of this size could be laid out any more advantageously for the comfort of the owner and his family.

The combination of short raised-deck and low trunk-house forward affords good room and ventilation below for the owner's accommodations forward, and, at the same time, gives the boat a good looking sheer, the attractiveness of the whole being added to by the well proportioned low deck-houses aft. There is an unusual amount of deck space, as the after deck is 7' x 11'. There is a 3' 6" bridge, extending the full width of the boat forward of the engine-room, while the decks on each side of the engine-room trunk are 3' wide, with those on each side of the main house aft 18" wide, to allow an easy passage-way fore and aft.

Below decks the accommodations are such that there is an abundance of elbow room,

even though the plans show an unusual amount of accommodations. The main cabin is entered from the after deck through a wide companionway located amidships. This cabin is 11' 3" long, with an average breadth of 12' 6", and has two extension transoms on each side 7' 6" long, with bookcases and alcove lockers in back. Forward of these two transoms there is a large wardrobe on each side for hanging clothes. A buffet locker for china, glass, and silverware, etc., is located between the galley and toilet-room doors on the forward bulkhead. At the after end there is a regulation berth 2' 6" wide placed athwartship under the after deck, with a large locker on each side. The galley is forward of this cabin on the port side and is 3' 6" x 8'. On the starboard side there is a toilet-room, 5' x 3' 6", opening into the main cabin. This adds to the comfort of the main cabin when used as sleeping accommodations. The staterooms are located forward, and are reached by a companionway from the bridge deck. A large double stateroom is located forward next to the forepeak bulkhead, and after it on the port side is located a stateroom with upper and lower berths, while the bathroom is on the starboard side directly opposite this stateroom.

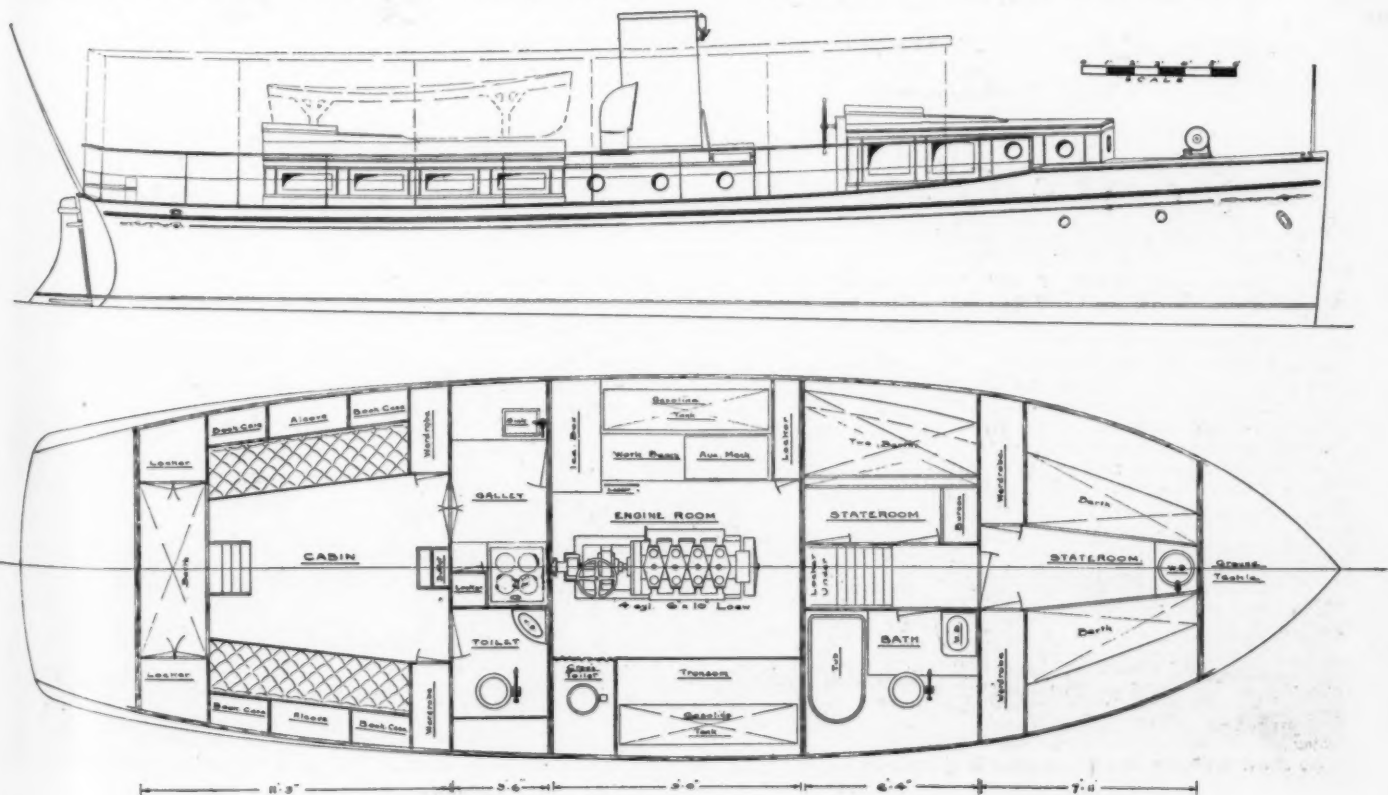
This craft is powered with a 4-cylinder 6" x 10" Loew-Victor engine, rated at 45 h.p. at 450 r.p.m. This will give a cruising speed of 10.4 statute miles per hour, which is extremely good when the beam of 14' is considered. The engine-room is between two double water-tight bulkheads, which stiffen the boat

at this point and help to absorb what little vibration there might be from this motor. There is a double water-tight bulkhead in the bow, and also at the after end of the main cabin, so that the hull is divided into five absolutely water-tight compartments, making her practically unsinkable.

The gasoline tanks are set in a copper pan with drains leading outboard, so that it is impossible, in any way, for the gasoline to find its way into the bilge.

The outboard rudder keeps the lazarette clear of quadrant and steering gear, and allows much more storage space than is usual. It also permits of having the steering gear installed on deck where it can readily be inspected and quickly gotten at in case of trouble. The tiller ropes run between the stanchions and the low bulwark, so that they are not in the way on deck. The tiller is under the low grating aft, which forms a fine deck seat. The simplicity of this arrangement can be appreciated by any one who has had a tiller rope break where it has been rove off in the usual way below decks in back of lockers, bulkheads, etc. By having the rudder outboard, it is farther away from the wheel than is usual, permitting the boat to be handled in either direction when going astern, and also permitting ease in turning and docking.

A boat of this design would make an extremely fine craft for use in the shoal Western rivers, and for cruising in Chesapeake Bay and the many shallow waterways along the interesting east coast of Florida.



A successful ten-mile cruiser which can be made practically a home during the summer months.

# Oomingma, a Scottish Cruiser.

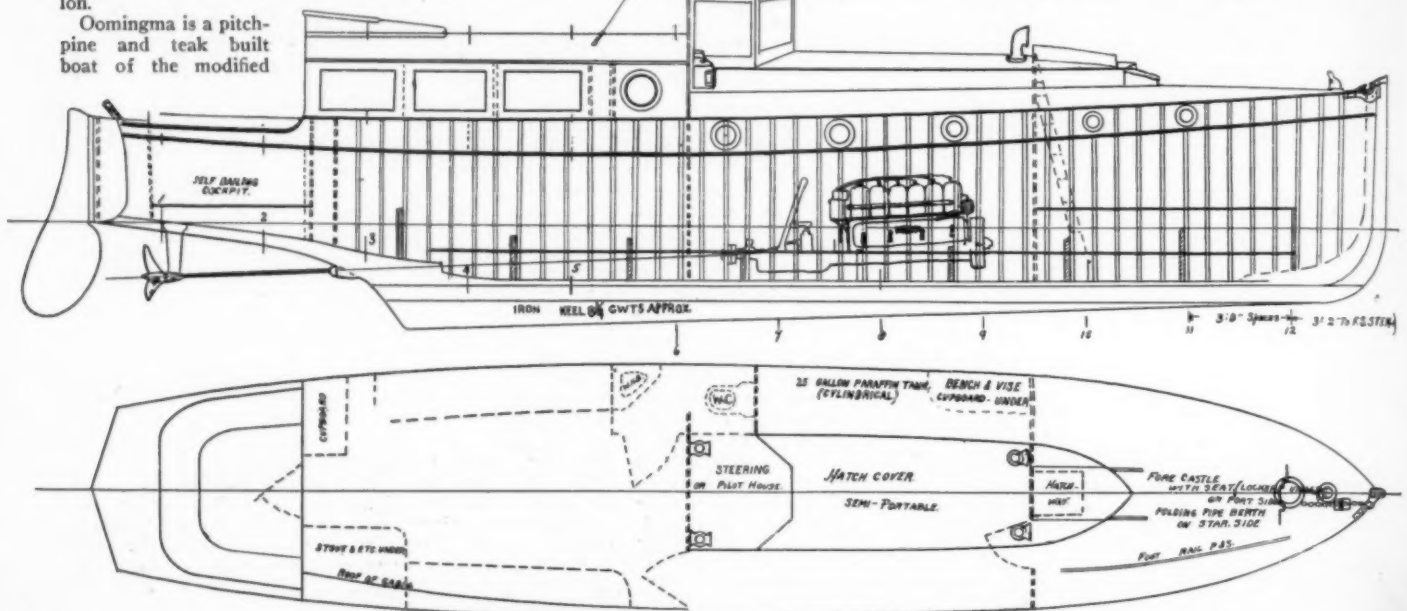
A British Built 38-Footer, Powered with an 80 H. P. American Motor Using Kerosene.  
A Pitch Pine and Teak Built Boat of the Modified Raised Deck Type.

EVER since the motor boat Detroit successfully navigated the Atlantic, the Scripps Motor Co., of Detroit, Mich., have been very active in the British market where they are represented by Messrs. W. & S. Pollock & Co., of Glasgow. Among recent orders secured is an 80-h.p., six-cylinder set for Mr. Talbot Clifton's new 38-footer Oomingma, which has been built to designs by and under the supervision of Mr. Wm. S. Connell, of Glasgow, by Smith Bros. An interesting feature of the installation is that the engine is fitted to use kerosene as fuel, with gasoline starting arrangements, thus conforming with the usual English practice. For motor yacht work high-powered gasoline equipments do not find favor, owing to the cost of that fuel being so high, namely, over 40 cents per gallon.

Oomingma is a pitch-pine and teak built boat of the modified

raised-deck class, with a straight stem, V-transom, coached roofed cabin aft, and a raised pilot house amidships. The requirements of her owner were that she was to be of moderate size, a good sea-boat, roomy and fast, and her designer claims that all these features are incorporated. She is 38 ft. long, by 7 ft. 9 in. beam, and 3 ft. draft. There is a complete installation of electric light, including a search-light mounted on the pilot house. The cabin is 10 ft. by 7½ ft. by 6 ft. 3 in. high, with adjoining. Fore-room have 5 ft. fore-cabin has seat and one a hatch on ladder

On the port side of the fore bulkhead is the switchboard, immediately below being a dynamo driven by a belt off the flywheel. Beside this is the self-starting compressed air tank tested to 250 lbs. per sq. inch. On either side of the ship is a large circular paraffin fuel tank of 20 gals. capacity, and on the starboard side a 12 gal. gasoline tank is fitted. On the starboard side aft end of the engine-room a semi-rotary pump is placed with two suction pipes for the bilge. One of these pipes can be used to suck from the sea. The Scripps engine is rated to run at 1,000 r.p.m., but in the boat is made to turn at about 800 r.p.m. At the aft end of the engine room is the wheelhouse. Two cowl ventilators are fitted on the fore end of the engine room hatch, and two ejector ventilators on the wheelhouse.



The engine-room has bulkheads forward and aft, strengthening the boat and keeping noise and exhaust odors from the main cabin aft.

## A 37-Footer for Mexican Waters.

OVIDIO is the name of a boat recently constructed by A. M. Gage, of Nyack, N. Y., after designs by Morris M. Whitaker, also of Nyack, for light commercial work in Mexican waters. Her design is simple, there being a trunk cabin in which the engine is installed and an ample cockpit. There is a locker forward for chains and Sampson posts of extra size, at bow and stern. Cleats placed along her gunwales render her easy to manage in making fast to a dock.

While resembling a pleasure boat in the beauty of her lines her large cockpit makes her available as a work boat of very fair ability.

She is equipped with a Buffalo heavy duty engine which, with a 26 in. by 30 in. Hyde propeller will drive her through the water at a 9½ mile gait. An electric lighting plant operates a very powerful searchlight fitted on the cabin deck. She can be controlled from the wheel which is placed on the port side of the cabin bulkhead, the companionway being on the starboard side. There is full headroom in the

combined engine-room and cabin, and seating space for several people in its quite roomy interior.

Ovidio is 37½ feet in length and her beam is 9 feet. Because she is to be used in shoal water she draws only twenty inches, this extremely shallow draft for a boat of this length being obtained by employing a stern of the tunnel type. She was built for the Anglo-American Petroleum Products Co. for use in the vicinity of Tampico, Mexico.



This shoal draft, trunk cabin cruiser is capable of making 9½ miles per hour. She will be used as a dispatch boat on the Gulf and is equipped with a searchlight for night running.



# SEA

# WOLF.

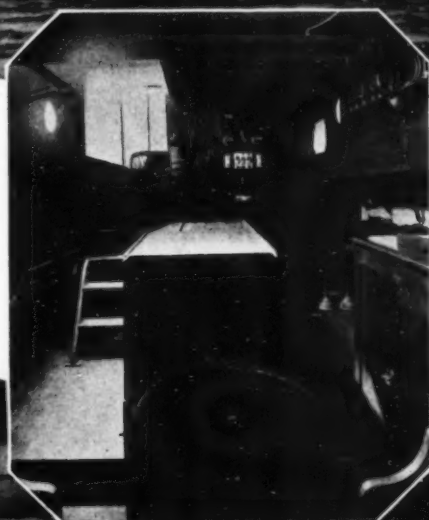


Her hull is substantial being built of 1½" cedar.

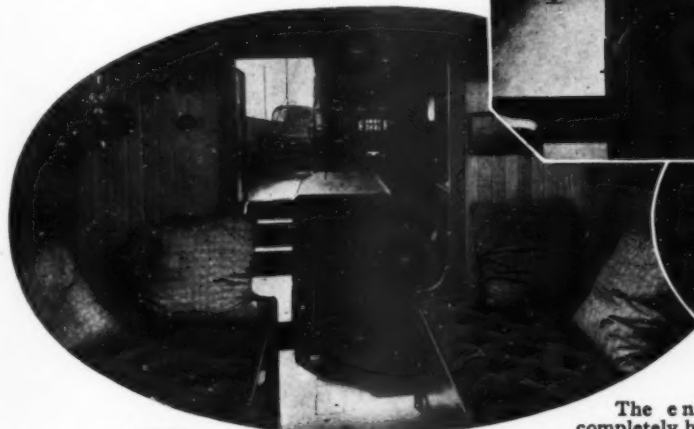
She has an average cruising speed of 11 m. p. h.

**S**EA WOLF, designed jointly by Mr. and Mrs. Le Roy Moody and George J. Stetz and built by George J. Stetz, at Bayside, N. Y., with the idea of entering her in the Bermuda race, was launched too late to enter, but she has since proved that she can take any weather she would be liable to meet on this course. Her length is 39 ft. 11 in. overall, her beam is 8 ft. 1 in., and she draws 3 ft. 8 in. of water. Owing to her flare torpedo bow and plane stern, she is one of the most

advantageous in rough weather, fitted on the port side of the engine room bulkhead, and the engine can be controlled from the wheel. The combined engine room and galley are three steps down from the cockpit level, the companionway being a wide one on the starboard side. A feature of the boat is the engine housing which completely covers the power plant and keeps the engine-room free from oil and noise. Another feature is an ice box designed especially by Mr. Stetz. It is built on



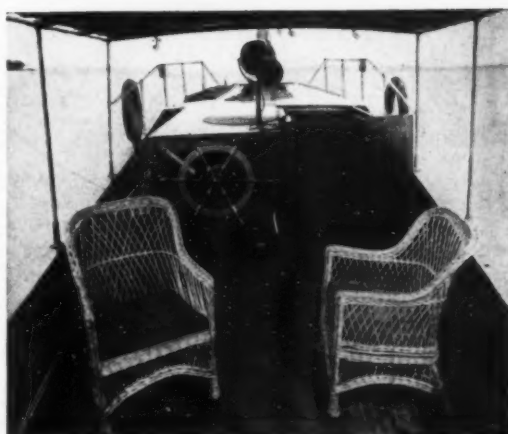
The engine is completely boxed in, keeping the engine-room cleaner.



There are two extension berths in the cabin with locker space beneath them.

wonderful deep sea pleasure boats ever constructed. Although she has encountered terrific seas, both in trough and stern ways off Martha's Vineyard, her high freeboard have kept her from shipping any solid water to amount to anything. Iron on her keel weighing 1,150 lbs. and one ton inside ballast keeps her from rolling excessively in any going. Her 30 h.p. 4-cylinder, 4-cycle Sterling of 5½ in. bore by 6 in. stroke sends her through the water at eleven miles an hour average cruising speed. Her owner thinks she will carry more power and if she is entered in the Bermuda race next year he will install a bigger engine.

Substantial handrails run along her deck from which rises the conventional signal mast, and the cockpit is deep and well protected from flying spray. She has an extra large steering wheel which is highly



Her large steering wheel is a valuable aid to easy handling.

what he calls the vacuum system, and its worth is proven inasmuch as it has kept a

Her interior arrangements are simple but comfortable.

hundred pounds of ice for six days of hot weather. There is also a bilge pump driven off the drive shaft. The pump was constructed especially for Sea Wolf and is of extra large dimensions.

Forward of the engine room is the cabin finished in cypress and mahogany, and having six foot headroom. There are two wide extension berths with locker space beneath them. Forward of this is the toilet with tilting hand wash-basin and running water. The fresh water tank with a capacity of 75 gallons is installed forward of the bow bulkhead, and this is piped in the usual manner to the galley sink. Two tanks set aft of the bulkhead in the stern in pans draining overboard carry 130 gallons of gasoline. An Apple dynamo generates electricity for lighting.

# A Tunnel-Stern 40-Footer.

A Craft Drawing 21 Inches, for Service in the Everglades and Other Shallow Places—  
Designed for Hunting and Fishing and for Use as a Single-Hander.

THE accompanying plans show a 40-foot shoal draft cruiser now being built by the Mathis Yacht Building Co., of Camden, N. J., for Louis S. Clarke, of Philadelphia, from designs by J. Murray Watts. The boat is intended as a single-hander for hunting and fishing purposes and will be used on Delaware and Chesapeake Bays in the summer and in Florida during the winter.

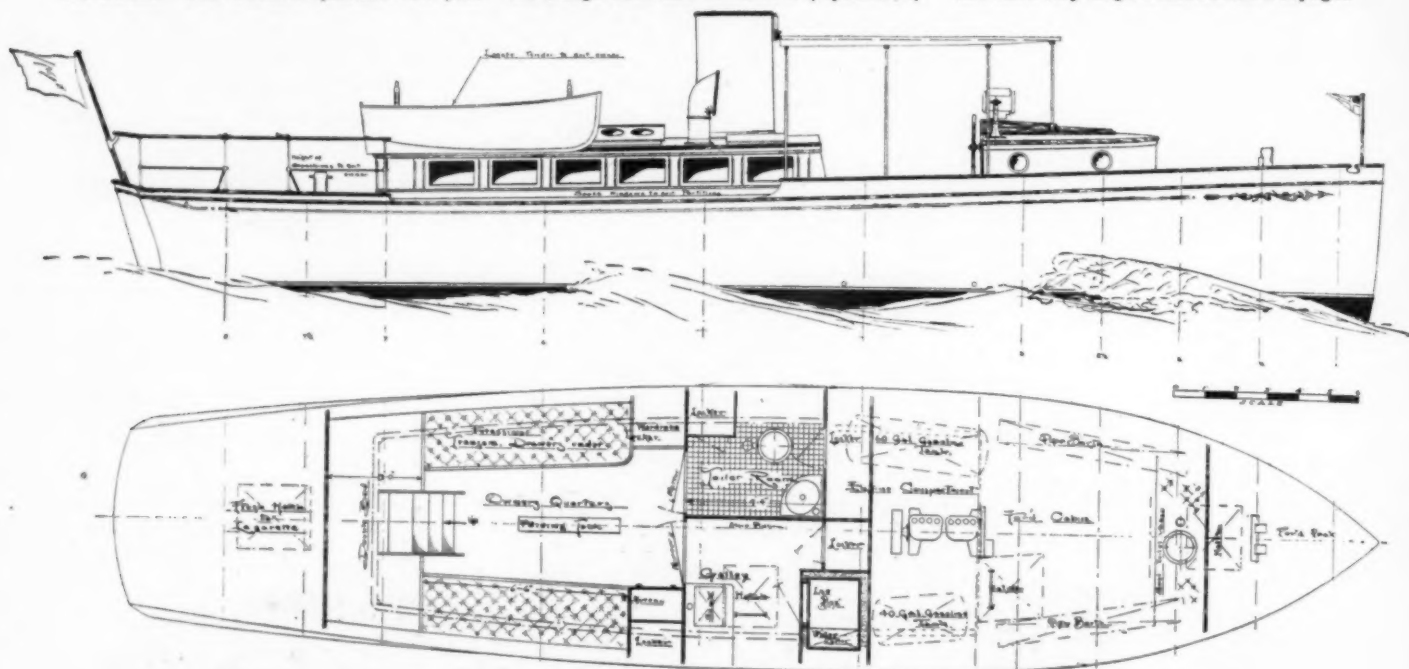
The arrangement of this boat is unusual, but well adapted for the peculiar requirements of the owner. The owner's quarters are just

aft of amidships and consist of a room 11 feet long with a wide bed and two extension transoms which can be used as seats in the daytime or made into beds for guests at night. There is a wardrobe on the port side and a bureau and locker on the starboard side. Access is had from the owner's quarters to a toilet room on the port side and the galley on the starboard side. These rooms are 6 feet long and give plenty of locker space.

The engine compartment is forward under the bridge deck and contains a 4-cylinder, 4-

cycle, 40 h.p. motor and also the electric plant. One hundred gallons of gasoline are carried in cylindrical tanks located on either side of the engine room. The forward cabin has berths for two men and suitable washing and plumbing fittings.

As in all boats for use in tropical waters, the ventilation has been thoroughly studied out, the toilet room and galley being ventilated by a stack which also takes the smoke pipe from the galley stove, and the owner's quarters have very large windows and a skylight.



Trinitaria's interior arrangements admit ample headroom and admirable ventilation in hot weather cruises.

# A 110-Footer for the Lakes.

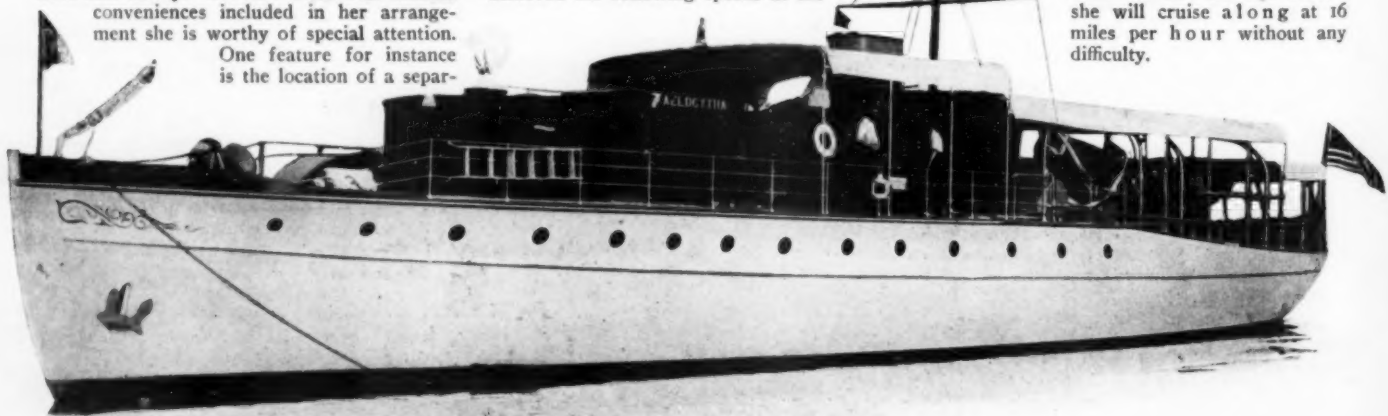
THIS cruiser, designed by Morris M. Whitaker, of Nyack, N. Y., and built by the Matthews Boat Co., of Port Clinton, O., plans of which were published in the September, 1912, issue of this magazine, has recently been put into commission, and her owner has expressed himself as being more than pleased with her general appearance and ability. Because of several unusual conveniences included in her arrangement she is worthy of special attention.

One feature for instance is the location of a separ-

ate toilet with each stateroom, while the extra large and comfortable quarters apportioned to the crew make for general satisfaction on long cruises.

Aeldgytha will eventually be powered with Craig-Diesels but for the present her power plant consists of two 100 h.p. Craigs. On her trial trip she achieved the following speeds at the

following revolutions: At 320, a little over 10 m.p.h.; at 335, not quite 11; at 355, not quite 12. The engines being new were not opened up, but at 355 r.p.m. she was developing a maximum of 150 total horsepower and was leaving practically no wake. Her designer expects that when she is fitted with her two 200-h.p. Diesels she will cruise along at 16 miles per hour without any difficulty.



Aeldgytha is of especial interest because she will eventually be powered with two 200 h. p. Craig-Diesels which will give her a cruising speed of 16 miles per hour.



# Vincent Astor's Sea Sled.

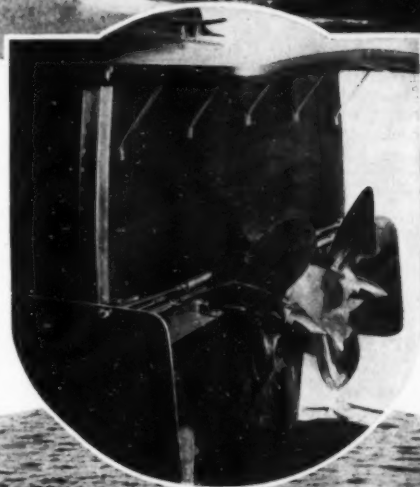
Noma, a Speedy Yacht Tender of the Viper V Type Which Draws Less Than a Foot of Water.  
A Remarkably Good Sea Boat That Planes Well with Five Persons Aboard.



**N**OMA, of the Viper V (Sea Sled) type, has just been built for Vincent Astor by the Viper Co., Ltd., of Pictou, N. S., after designs by Albert Hickman. She will be used as a yacht tender, and is capable of making over 25 miles per hour. She is 18 ft. in length with a beam of 4 ft. 8 in., while her surface propellers enable her to run in a foot of water encumbered with eel grass at a high rate of speed. Her side plate rudders are actuated by positive rack and pinion without any chains or steering line and in no wise affect her speed or weedless qualities. They are fitted with springs to hold them steady in backing.

This little sea sled of the semi-monoplane type will plane readily with five or even six people seated aft. She is extremely dry, runs wonderfully well in a chop, and it is believed that she is the ablest speed tender of her approximate size that has ever been afloat. Her ability is further shown when it is said that she will plane with three or four persons aboard with the throttle less than half open.

She is powered with a 60-h.p.,  $4\frac{1}{2}$  by  $4\frac{1}{2}$  inch Sturtevant six-cylinder engine with Mea magneto and two Zenith carburetors, making the first time that the new Sturtevant engine has been installed in a boat, and from the start this machine has given absolutely no trouble. During propeller trials it was run at times between 1,700 and 1,800 r.p.m., and for considerable periods between 1,600 and 1,700 r.p.m., and with practically no vibration. The boat has two surface propellers of the right and left-hand types, and the port propeller is run by a gear off the main driving shaft. The gear box which is placed well aft is practically noiseless as the gears run in oil on annular bearings with ball thrusts



ahead and astern. No moving parts are visible in the boat, everything being covered with brass shield work. Joe's reversing gears are installed just aft of the engine.

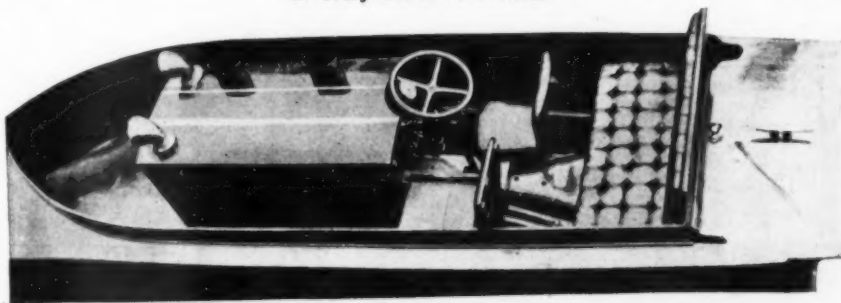
As before stated she can accommodate five or even six persons, and the seating arrangement consists of a rear transom and two collapsible seats forward which can be turned out to permit free passage fore and aft. Her hull throughout is of Gold Coast African Mahogany, and her finish work and engine installation were done on behalf of the Viper Co. by Murray & Tregurtha, of South Boston.

The design of this type of boat includes three distinct departures from custom in the shape of her hull, her system of steering by rack and pinion, and her method of propulsion by surface propellers. The propellers used are of greater diameter than usual for a boat of this length because only one blade is immersed at a time. The possibility of side thrust is done away with by having right and left-hand wheels. Slippage amounts to only 7 or 8 per cent., and the higher the speed the more effective the propellers are. Instead of the engine being set at a rake as in other boats, it is mounted level, with the propeller shafts running along the bottom of the boat and out through the stern at the water line, this arrangement offering improvements in fuel supply and from the standpoint of more effective lubrication.

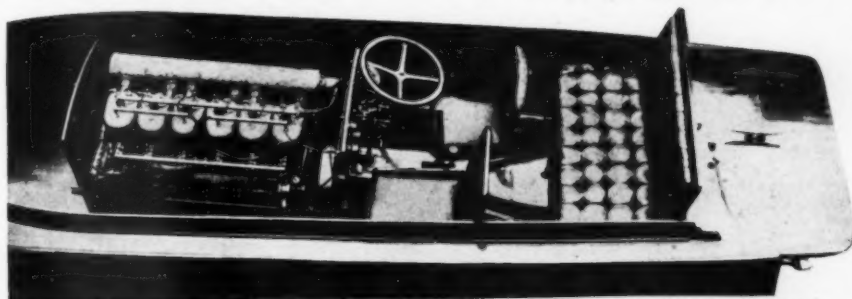
Advocates of this type of boat say that the sled can be used for hours at a stretch as the automobile is used, covering between seventy-five and a hundred miles in an afternoon, and over water that would be considered rough for any small boat, with utmost comfort, absolute dryness, and complete freedom from pounding. Freedom from a sense of insecurity that is felt in the ordinary type of hydroplane and in displacement speed boats in a following sea is another feature claimed in its favor.



Noma's two surface propellers give her a speed equal to that developed by one screw propeller of similar dimensions, and respond more readily in terms of speed to every added revolution.



With the engine cover in place every moving part of the power plant is covered. The two collapsible seats can be turned out to afford free passage fore and aft.



The 60 h. p. 6-cylinder Sturtevant marks the first installation of this new motor in a motor boat, and it has been highly successful, turning over at 1,800 r.p.m.

# Lydia III, An Offshore Cruiser.

A Boat Having Large Auxiliary Sails By Which She Can Be Driven in an Emergency.  
Ample Accommodations for Use as a Family Boat on Extended Cruises.

**D**ESIGNED and built by Frederic S. Nock, East Greenwich, R. I., for Col. Zenas W. Bliss, of Providence, R. I., with an overall length of 55 feet, 9 inches, 11 feet, 6 inches beam, and 4-foot draft, Lydia III is an exceptionally good type for offshore cruising. The power plant which is of medium size, being a 4-cylinder,  $7\frac{1}{2}$  by 9 inch 4-cycle type, is capable of driving the boat at about 11½ miles per hour. She has ample sail area to increase the speed of the boat materially and to steady her, and in case of an accident to the power plant, the sails are so arranged that she could be driven by them at a fair rate of speed.

She is used as a family boat, and the interior arrangement was worked out with that in view. Forward there is a good sized galley with ice box, dresser, shipmate range, alcohol stove, provision lockers, etc. There is a step up to the line of the floor of the saloon and on either side of this passage there are lockers for dishes, chinaware, glassware, etc. The steps are removable, giving access to the coal and wood lockers. On either side of the saloon is a double width pullman berth, and aft of same is a locker on the port side and a small lavatory on the starboard side at the foot of the com-

panionway. There is a seat across the after end of the saloon with storage space for canned and bottled goods. An extension table and chairs make this saloon very complete as a dining saloon.

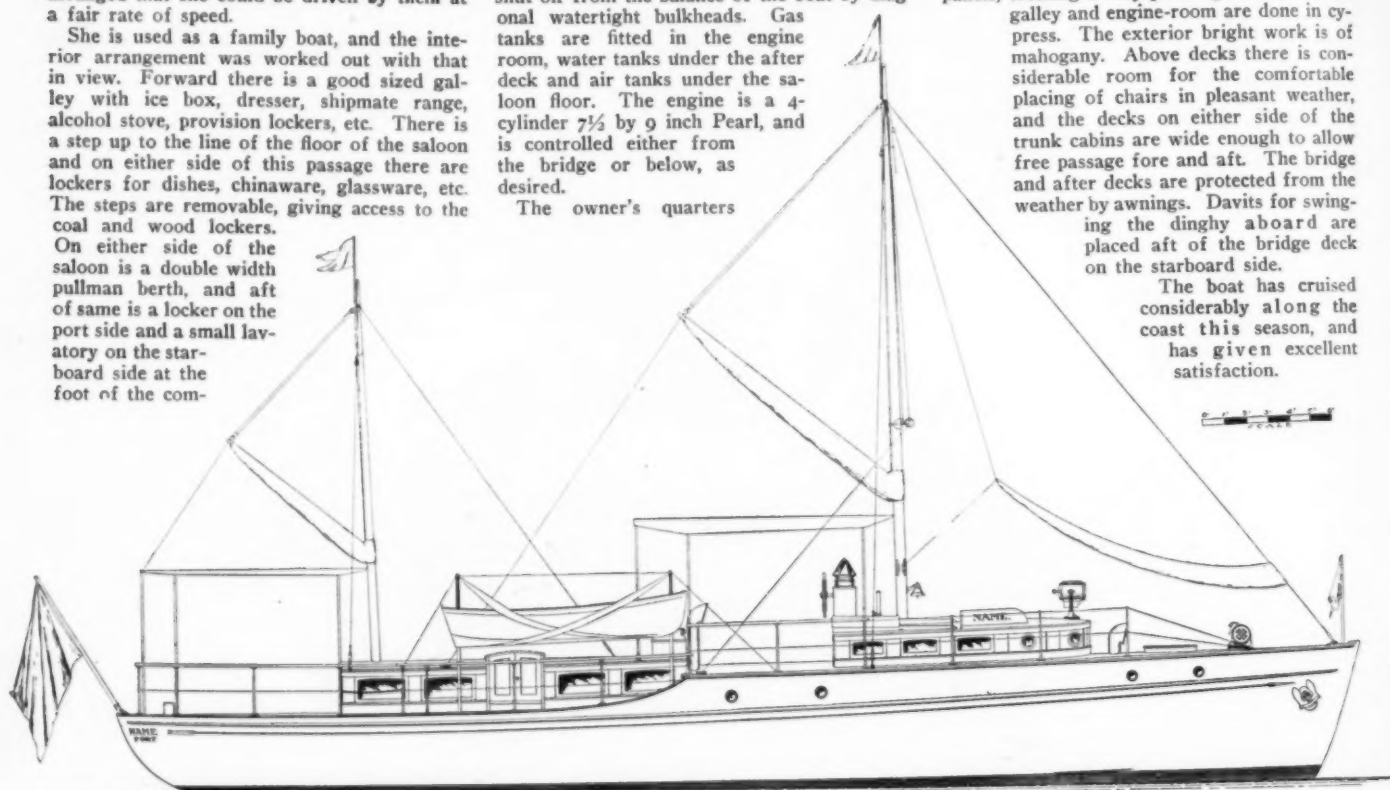
On the opposite side of the entrance to the saloon is the companionway leading to the engine room, which is arranged so that the paid hand has ample accommodations, berths being fitted over the gas tanks. A sink, toilet, clothespress, tool lockers, etc., are also provided, as well as a platform for a direct connected lighting plant. The engine room is shut off from the balance of the boat by diagonal watertight bulkheads. Gas tanks are fitted in the engine room, water tanks under the after deck and air tanks under the saloon floor. The engine is a 4-cylinder  $7\frac{1}{2}$  by 9 inch Pearl, and is controlled either from the bridge or below, as desired.

The owner's quarters

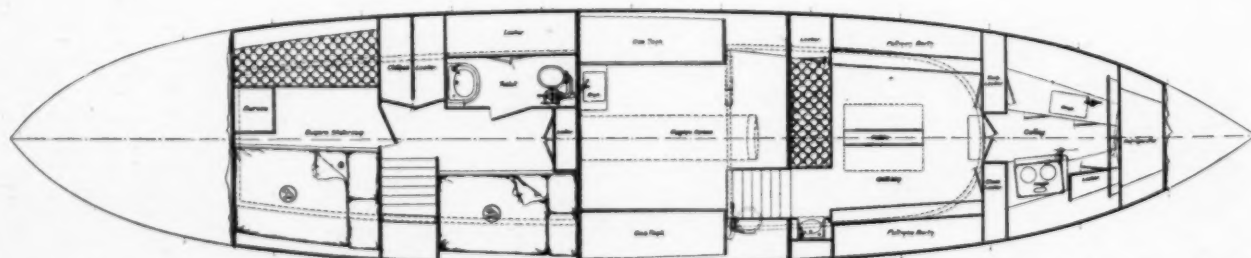
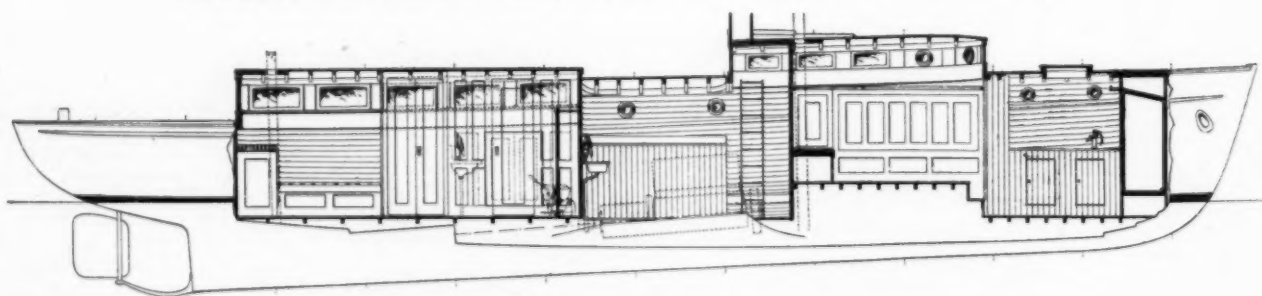
aft comprise a large stateroom with double berth, divan, bureau, etc. Forward on the starboard side are a double berth, clothespress, etc., while on the port side there is a toilet room with linen lockers built under the deck, and between this room and the owner's stateroom there is a double clothespress. In the center of the boat, at the forward end, there is a large locker for guns, fishing tackle, and other sporting goods.

The general finish of the owner's quarters aft is cypress and butternut; forward, the saloon is finished in mahogany and butternut panels, creating a very pleasing effect; and the galley and engine-room are done in cypress. The exterior bright work is of mahogany. Above decks there is considerable room for the comfortable placing of chairs in pleasant weather, and the decks on either side of the trunk cabins are wide enough to allow free passage fore and aft. The bridge and after decks are protected from the weather by awnings. Davits for swinging the dinghy aboard are placed aft of the bridge deck on the starboard side.

The boat has cruised considerably along the coast this season, and has given excellent satisfaction.

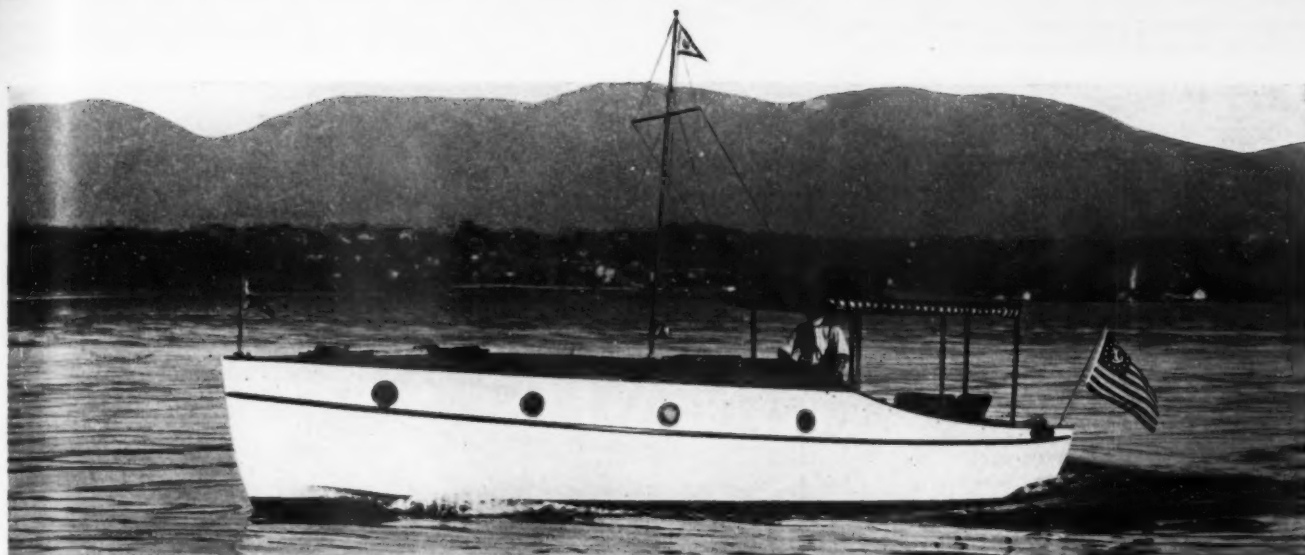


Her 4-cylinder Pearl is installed directly below and she can be controlled from the bridge.



The owner's quarters are finished in cypress and butternut, the saloon in mahogany and butternut panels, and the galley and engine-room in cypress.





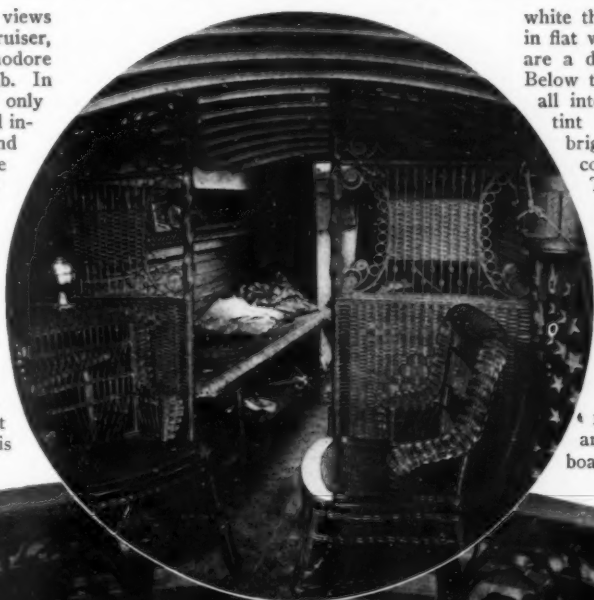
Cyrene II under way. The hull was built from stock frames made by the Niagara Motor Boat Co.

## A Boat with a Wicker Interior.

How Something Different Was Done by an Owner-Builder with Regular Stock Frames.  
Cyrene II, a Twenty-Eight-Footer Cruiser Whose Cabin Finish is Unique.

ON THIS page are shown several views of the new and very attractive cruiser, Cyrene II, owned by Ex-Commodore H. G. Pratt, of the Newburgh Yacht Club. In overall dimensions, while this boat is only 28' x 6' 8", yet, in construction details and interior arrangements, several original and unique features are embodied which have been worked out by Commodore Pratt himself.

Perhaps the most attractive feature is the general interior arrangement scheme, which is well shown by the photographs. Instead of the usual and almost orthodox practice of lockers, transoms, bulkheads, galley, etc., built of mahogany or some other usual interior finish, the owner has constructed all of these out of wicker-work, manufactured by the Wicker-Kraft Co., of Newburgh, N. Y., and the effect is a most pleasing one. The interior color scheme in this little ship is light green and

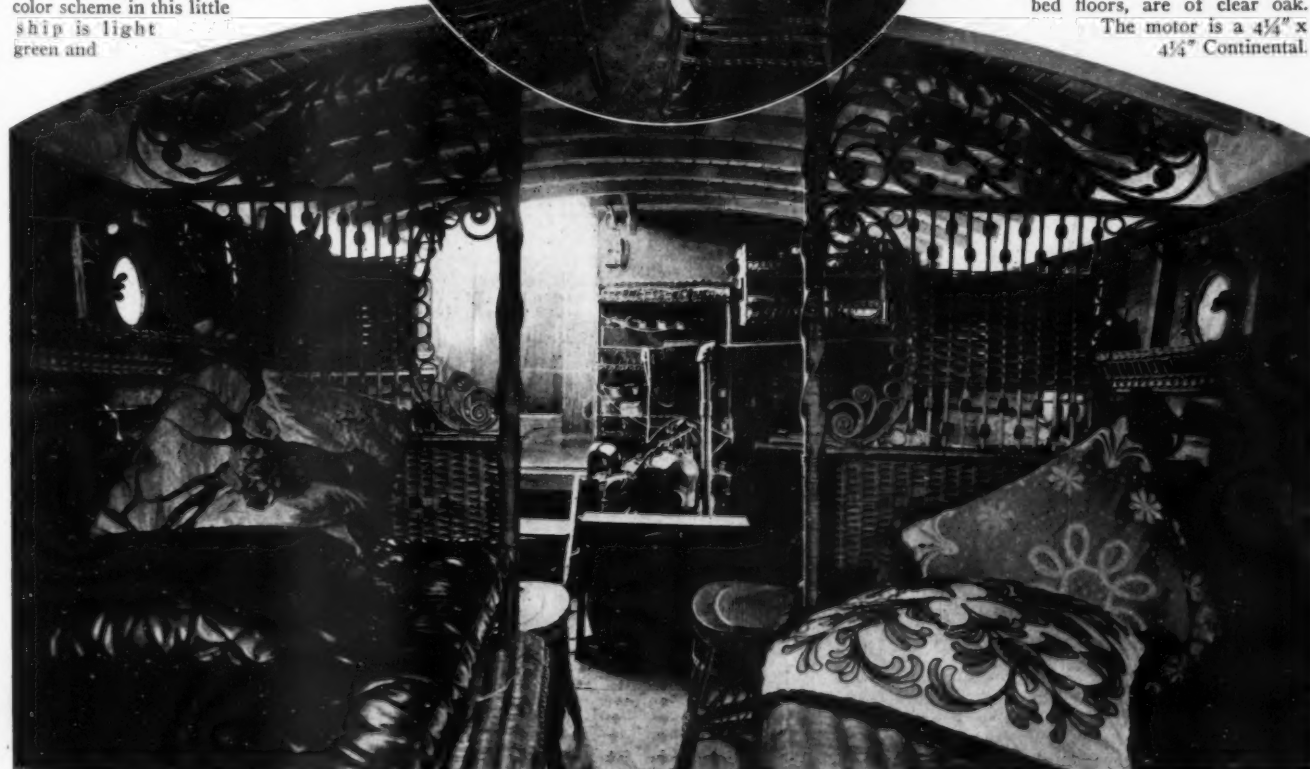


white throughout. The cabin ceiling is done in flat white; cabin sides, down to sheer line, are a deep mahogany stain with dull finish. Below this and down to the cabin floor, and all interior wicker-work, is done in a light tint of green stain and varnished. All bright work, including the interior of the cockpit, is in light green and varnished.

The hull was constructed jointly by the owner and Mr. Jerome, of the Newburgh Launch Works, from a regular stock frame, made by the Niagara Motor Boat Co., of North Tonawanda, N. Y. It is planked with long length cypress, copper-fastened throughout and the frame and floor construction is especially strong.

The keel is made from oak 2 3/4" thick; keelson, 3" x 5"; frames, 1" x 1 1/4"; spaced 8" centers; clamps are 2" x 3", running full length of the boat. All the above, including the engine bed floors, are of clear oak.

The motor is a 4 1/4" x 4 1/4" Continental.



Two views of the cabin of Cyrene II, showing the finish in wicker-work.



### QUESTIONS FOR THE JANUARY ISSUE.

1. Discuss the most desirable arrangements for the interior accommodation of a medium size cruiser, using diagrams wherever necessary.

(Suggested by S. M. Lee, New London, Conn.)

2. To lengthen out a boat explain how to proceed with the work and what particulars should be given special attention.

(Suggested by E. Newell, Gloucester, Mass.)

3. Explain with necessary sketches, wiring plans for the electric lighting system on some particular type of motor boat, using both battery and dynamo.

(Suggested by A. P. B., Cleveland, Ohio.)

We must insist that when competitors send in their answers they state exactly what they desire for a prize, should they win, giving us full instructions for ordering, and leave the rest to us.



### RULES FOR THE CONTEST.

Answers to these questions, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be: (a) In our hands on or before November 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 25th of November.

The prizes are: For each of the best answers to the questions above, any article advertised in MoToR BoatinG, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in MoToR BoatinG which sells for more than that amount. (There are three prizes, one for each question, and a contestant need send in an answer to but one if he does not care to answer all.)

For each of the questions selected for use in the next contest, any article advertised in MoToR BoatinG, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in MoToR BoatinG, which sells for more than that amount.

For non-prize-winning answers published we will pay space rates.

## Changes in Motor Design.

What the Experience of the Past Season has Taught Especially in Regard to the Different Fuels, Fuel Economy and Improvements Which Should Be Given Attention.

THE PRIZE CONTEST—Answers to the First Question in the September Issue.

### Practice Depends Upon the Type.

(The Prize-Winning Answer.)

**M**Y EXPERIENCE during the past season with a goodly number of different representative makes of marine engines, from the standpoint of both operator and repair-man, has convinced me that, although taken as a whole they are wonderfully efficient, there is still need of further development and refinement of detail. What is good practice in one type of motor is not necessarily desirable in another. Some makers are too prone to ignore this. For instance, separate cylinder heads are certainly an advantage on heavy-duty engines of large bore, because the great weight of the complete cylinder casting makes it difficult of removal when repairs or cleaning is necessary. With small bore, light motors, solid heads are very satisfactory, as they eliminate the troublesome gaskets.

The present tendency of manufacturers toward accessible construction is very commendable, but can well be carried still further, especially as regards cam gears and crankshaft bearings.

For the benefit, particularly, of the motor boat devotee, who is his own mechanic, especial attention should be paid to making all of the bearings readily renewable by bushings. This year I have noticed more broken and sprung crankshafts and connecting rods than ever before, especially in heavy-duty machines. The extra weight entailed by allowing a greater margin of strength in these parts can do no harm in the heavy and medium-duty motors. With the possible exception of the extreme high-speed type, the present tendency towards lengthening the stroke can, on the average, be carried still further. With the present low-grade fuel, the long-stroke motor runs smooth, is easy on the bearings, and is economical, other things being equal. This applies to both four and two-cycle machines. In order to handle fuel as low grade as kerosene successfully, an engine must be designed with that end in view. To secure economy the compression must be greater than with gasoline; the water-jacket must be of great volume, owing to the greater heat of combustion of the kero-

sene vapor. With any of the present fuels it is imperative to provide means for heating the carburetor to promote vaporization, and the inlet passages to prevent condensation, which is so fatal to smoothness, economy and flexibility. True of two or four-cycle. Governor control is very desirable for medium and heavy-duty motors, preventing destructive racing, preventing flooding, and rendering a delicate adjustment carburetor unnecessary.

The introduction of water into the cylinders via inlet manifold of the 4-cycle, or the bypass of the 2-cycle will assist in preventing heavy carbon deposits and pre-ignition in large motors.

If extreme reliability is sought, it pays to have two independent ignition systems, deriving their current from separate sources.

Mixing the oil with the fuel is the best system of lubrication for 2-cycle motors, and force-feed answers all requirements for 4-cycle machines.

M. S. BROWN, Pacific Grove, Cal.

### Fuel Economy.

**E**XPERIENCE of the past season has shown that the comparatively heavy grades of gasoline which have been on the market will give more power per gallon than did the lighter kinds we used to get. But carburetor adjustments must be made more carefully and the engine warmed up a little before the best results are attained.

In the colder days and evenings it is a little hard to get things going. This difficulty is easily overcome by keeping in a closed squirt can a mixture of gasoline and ether, half and half, for priming the engine.

It is also wise, especially in the colder weather, to see to it that not too much water passes through the water-jacket. Don't think that the engine is running better when it is running cool. A certain amount of heat is necessary for economical operation. A good rule is to give the jacket just enough water to keep the outside of the engine down to a heat which will not burn the hand.

Experience with several motors has shown that nearly any boat will go almost as fast and a great deal farther with a given amount of fuel, when the throttle is partly closed.

E. W. MARSHALL, New York City.

### Preventing Water from Entering Cylinders.

**I** WISH to comment on one feature of a new motor of well known make which I installed in my boat this spring. The bottom of the exhaust outlets in the cylinders and the bottom of the exhaust manifold are on the same level. Aft of the last cylinder there is a needle valve in the exhaust manifold which admits water from the jacket direct into the exhaust. The purpose of this is to keep the exhaust piping muffled, etc., cool.

When I received my motor, I did not take it apart and find out its construction, but supposed it to be able to operate successfully, and so it was installed almost in a horizontal position since there is a universal joint in the shaft line and the motor is set well forward.

When launched, I succeeded in starting the engine and when the exhaust piping commenced to get hot, I thought of the needle valve and turned it on. This cooled the piping and muffler very well, but, unexpectedly, the motor stopped, and, not knowing the special internal construction of it, found that it would explode several times, when water would come shooting out of the primer cups.

The next day the exhaust manifold was taken off and the construction referred to was found, and also the fact that the water from the jacket would continue to run into the exhaust piping even after the motor stopped and when you tried to start it by rocking the fly-wheel, the suction caused the water to rush into the cylinders.

I learned my lesson and now I turn the valve on when starting and off immediately when stopping, and all of the above work (which you are liable to forget in the anxiety of sudden start or stop) is caused by an improperly designed manifold. The part the water enters, or the entire channel could have been lowered to prevent it backing up.

Next year I intend cutting out the needle valve entirely and admitting some water further aft in the exhaust piping, so that it will not run back into the cylinders. This will have no valves and will not need attention.

L. R. KELLEY, Phila., Pa.







# PRIZE CONTEST



## High Grade Fuel Necessary.

THE most profitable thing that the experience of the past season has taught me is that it pays to use 70-degree gasoline instead of the low grade commonly supplied.

The argument by which it is attempted to reconcile one to the use of low-grade gasoline is that such gasoline contains more heat units than the higher grades and, therefore, more power. But I say that while, theoretically, the low-grade gasoline may contain more heat units, practically, the usual and ordinary gasoline engine, as commonly constructed, without special appliances, is not able to extract those extra heat units, but, on the contrary, as a matter of fact, is able to extract fewer heat units from the low-grade fuel than it will extract from a higher grade fuel that contains not so many heat units in the first place. If the argument for using low-grade gasoline in an engine without special appliances for carbureting it is a good one, then why not use kerosene in the same engine with even better results, for kerosene contains more heat units still?

In this locality this season ordinary gasoline has cost about 16½ cents a gallon and 70-degree gasoline about 20½ cents a gallon. I burn about 250 gallons a season, so that the extra cost to me of the higher grade has amounted to about \$10 for the season. If there were no other reason, that extra \$10 would be well spent for the relief and pleasure the higher grade of fuel gives me in the greater responsiveness, flexibility and ease of operation of my engine. It carries me back five or six years to when an engine ran just as well in cold weather as in warm, and just as well when throttled down as when "wide open," when all engines were frisky as young colts, and there was no danger on a cold day of "killing" them when one pushed in the clutch.

As it is conceded that gasoline may constantly increase in price, and as it may be assumed that the difference in price between the low grade and higher grades will become wider, and, consequently, the desirability of using the lower grade greater, in my opinion an improvement in engine design which should be given principal attention, is one to secure a proper heating of the inlet manifold. Carbureters are now hot-water-jacketed, and hot air is fed to them, but these expedients are not sufficient. The whole inlet manifold should be heated. In my opinion, the heat of the circulating water is not to be depended upon for this purpose, but the heat should come from the exhaust gases. In cold weather, with low-grade gasoline, it is almost impossible to get a marine engine warmed up. Priming will start the engine and it will run idle well enough, but as soon as the load is put on it will stop. This results principally from the over-enrichment of the mixture, due to condensation in the inlet manifold. If dependent, in such circumstances, upon the circulating water for heating the manifold, the manifold would never get hot, but if using exhaust gases the heat of such gases, even with the engine running idle, would soon warm the manifold sufficiently to prevent condensation and permit the engine to draw a proper working mixture.

A hot inlet manifold, even when using very low-grade fuel, would mean a quick-starting, flexibly-running engine, and greater susceptibility to economical carbureter adjustment.

Mechanical mixers are a great help in many engines, and are being used to considerable extent. The mechanical mixer gives good results even with auxiliary heating which tends to expand the air and perhaps produces slower combustion.

EDWARD P. HUMPHREY,  
Appleton, Wis.



## Experiences with Marine Motors.

THE internal combustion motor, especially as designed and built for marine propulsion, still is in its infancy. The general principles upon which most of the motors are built are excellent, but the details of design leave much to be desired. So far as economy of fuel, and, especially lubricants is concerned, our motor manufacturers should realize very soon that these very necessary commodities dispensed by the Standard Oil Company at a lucrative price are really worth hoarding, and their one object should be to utilize in their output as nearly as possible every heat unit, which is power, gasoline contains, and every molecule of lubricating value in oil.

The greatest faults most marine motors have are somewhat as follows:

**First**—They are blessed or cursed with too many small bearings, both on crankshaft and camshaft. Far better to have three large crankshaft bearings and a heavier crankshaft on a four-cylinder motor, or even two bearings and they should be either rollers or balls. Ball-bearings give best results though, as they allow of slight misalignment. Ball-bearings show but a small increase in friction from low speed and loads, to high speed and loads, while every revolution and each pound of pressure adds materially to the friction of the finest and most copiously lubricated plain bearings. Camshafts are best of large diameter and few bearings. Power wasted in bearing friction is power wasted at the propeller.

**Second**—The reciprocating parts of all motors are far too heavy. The power and fuel consumed in jerking the pistons back and forth on their journey is enormous. Many pistons have too many rings, and most of the rings are too wide and heavy, causing extra friction upon the cylinder walls, which is lost power. The reciprocating portions of the valve mechanism of most motors are needlessly heavy; the push rods; latches, when used; rocker arms, and the valves, too, take power to stop and start.

**Third**—It apparently has never occurred to us that the inertia of the incoming gas through the carbureter and manifold, as it is stopped and started from its source to the various cylinders, is power used; that the inside walls of the manifold should be very smooth to reduce wall friction, which is considerable, for even in a slow-speed motor the velocity of the gas is high.

What is true of the incoming supply of power is even more true of the burned and expanded gas. The exhaust ports and valves should have at least twice the area of the inlet ports, and more, if possible.

**Fourth**—The reverse gear should also be completely inclosed in an oil-tight case. I don't believe there is a more unclean, as far as grease and oil goes, piece of machinery in the world than the average reverse gear not so equipped. There should be stuffing boxes wherever a moving shaft protrudes from the motor—to save lubricant.

**Fifth**—Magnetos or pumps should be driven axially through flexible couplings, for they are not made to withstand radial loads. Most motors have both pump and magneto thrust up against a convenient exposed gear, to work as best they can under the circumstances.

**Sixth**—Although they have advantages, L-head, or T-head motors, with their various departures, are inefficient because—

Gasoline, like everything else in the universe, is blessed with a given number of heat units—whether stored within red meat, which gives our bodies power to think and work; in coal, which almost runs the machinery of the world, or in oil, our precious gasoline. The more heat units saved and marshalled, so as to expend

their efforts toward useful labor, the better.

In a gasoline motor, useful labor for our friends, the heat units consist of giving a lusty kick or impulse to the down-going piston. The more concentrated the kick, the better the results and the higher the efficiency. In an L or T-head motor some of this wished-for concentration of heat expanding is dissipated through the valve bonnets and the cooling water about the valve seats and pockets, so does not help toward creating power.

The above observations are written solely from experience with some seventy odd differently designed and built motors, and is not merely supposition and enthusiasm.

WILLIAM ATKIN, Huntington, L. I.

## Several Changes Suggested.

I HAVE found that adjusting the carbureter nearly every time the source of gasoline supply is changed is necessary with modern heavy gasoline, and that putting a piece of wire mosquito netting across the intake aids in mixing cheaply and simply.

In engine design there are several things which might be given attention advantageously. On 2-cylinder, 2-cycle engines there is a rocking motion, due to one crank being up when the other one is down. This could be improved by counter-weighting the throws of the crankshaft. If this were done, the gain in smoothness of operation would more than pay for the additional weight.

The bed-plate of the engine should be extended so that the bed timbers could pass the fly-wheel. This would give greater strength to the engine bed and eliminate vibration.

In an engine with the upper half of the crankcase and the cylinder not cast integral, there should be large square hand-hole plates on both sides of the crankcase. On one engine, in order to replace a melted connecting rod bronze, it was found necessary to remove both cylinders and both pistons from the connecting rods before the upper crankcase casting could be moved enough to get at the connecting rod bolts.

Nuts should not be hidden in pockets or behind the attachments which they fasten so that it is nearly impossible to get at them with a wrench, as is often done on crankcase bolts.

It might be advisable to cast the exhaust and intake manifolds integral on three-port, two-cycle and L-head, four-cycle motors. This would save space and warm the incoming gas, both of which are desirable.

It is sometimes necessary to make repairs on the best engines, and any engine should be built so that it is possible to take it down easily, and with few special tools.

One of the most talked-of problems in gasoline operation is economy at varying speeds. I have solved this problem in a way that is simple and gives the greatest range of adjustment. Its operation is entirely automatic. To the throttle is connected a rod to the control lever which is carried to a locker beside the engine. A butterfly valve is clamped over the intake of the carbureter, and worked by a wire. The carbureter is adjusted as well as possible with the throttle open. Then, in slowing down, the control is moved, closing the throttle and the butterfly valve at the same time, thus giving more gas at low speeds.

If at a medium speed the engine is starved, shorten the wire and re-adjust the clamp, which opens the valve more slowly.

This cured an engine, which, before using it, could not be made to run slowly without changing the adjustment of the carbureter each time the engine was slowed down.

E. R. MORTON, Hoboken, N. J.



# PRIZE CONTEST

## A Cabin Wall Rack.

Several Suggestions with Detailed Sketches for the Construction of a Neat Case for Holding Books, Glasses and Other Little Things Which Accumulate in the Cabin.

THE PRIZE CONTEST—Answers to the Second Question in the September Issue.

### Combined Dish Locker and Book Case.

(Prize Won—Credit on Mohawk Motor.)

**A**N ESSENTIAL part of the cabin or galley equipment is a properly-constructed and well-placed wall-rack. The accompanying sketch illustrates clearly the construction of a compact and useful rack of the kitchen cabinet type recently designed for use on a small cruiser. Detailed directions are hardly necessary, and the different dimensions will vary according to the amount of space at hand. However, the one in question is 45 in. in length, 15 in. deep and 18 in. high. The "box" is divided lengthwise into three compartments, each about 15 in. long. Each outer compartment is divided by a single shelf set on cleats halfway up between the top and bottom boards, making excellent space for stowing canned goods, supplies in preserve jars, small pans and other small articles of culinary equipment. The doors to these parts are simply paneled as shown.

The middle portion is subdivided by two shelves into three parts, each about 6 in. high. Each shelf is provided with a scalloped strip or guard to prevent articles from rolling off. These compartments give excellent stowage space for cups, glasses, etc. In one, plates; saucers and bowls in another; and knives, forks and spoons in the third. The back is carried up about 9 in. above the top board, which is partitioned off by two short pieces, braced by a narrow strip (see sketch), thus affording ample room for books, magazines and catalogues.

The rack is held in place against the cabin wall or bulkhead by long screws through screw eyes set in

laced or varnished (inside as well) the cabinet will, without doubt, be as ornamental and attractive as useful.

Before you begin the construction, size up the stock you chance to have on hand, for perhaps parts of the same might be used for the back, bottom, shelves or partitions, but fairly good stock should be procured for the front and sides.

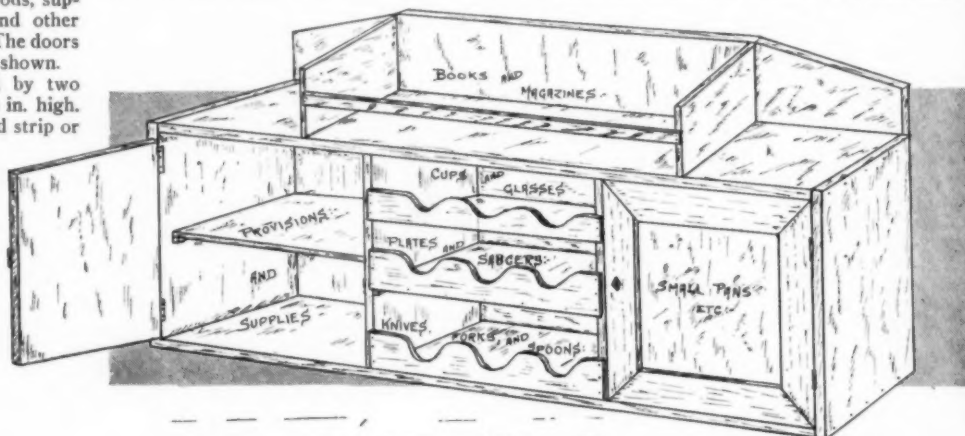
The best material out of which to construct the wall-rack is largely dependent upon the interior finish of the cabin itself. Of course, mahogany is almost beyond comparison, provided that it will harmonize with the rest of the woodwork.

In finishing mahogany, the best practice does not permit the use of a wood stain to give color to the work. The color will come with

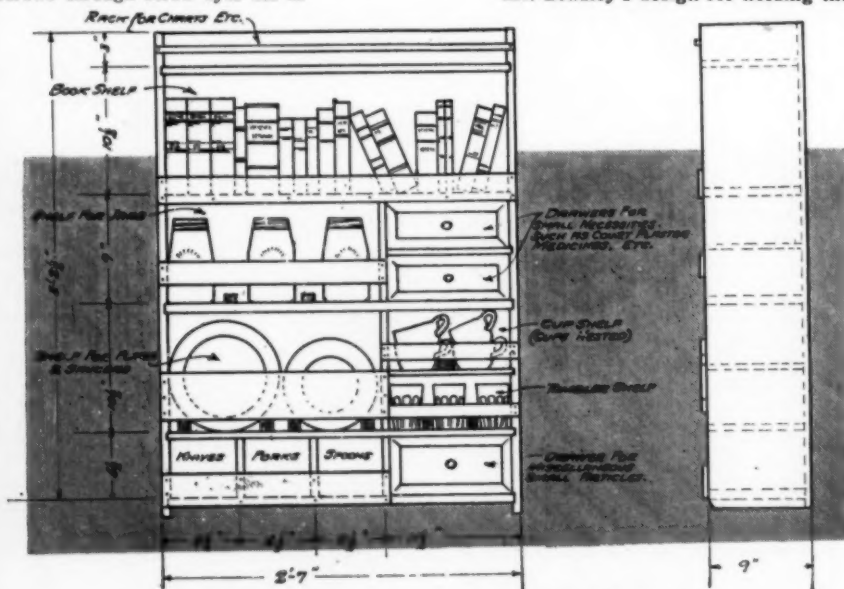
### To Hold All the Small Things About the Boat.

**D**ID you ever notice how quickly and how easily a thing is lost or mislaid on the average boat? Well, if you own a boat of any kind you have, and you will appreciate a wall-rack that has capacity to hold these small but, very often, important things. The drawing shows a rack in which is attempted the carrying out of "A place for everything and everything in its place."

Of first importance is the proper stowing of the dishes, etc. The knives, forks and spoons are taken care of in small pens about 6 in. wide by 5 in. high, as shown on lower shelf. The remainder of this shelf can be used for holding the drawer for miscellaneous articles. The plate shelf should be provided with small blocks



Mr. Bradley's design for holding the dishes and cooking utensils on a small boat.



Excellent design of wall-rack, suggested by Mr. Motz.



the backboard at intervals around the edge. If a little care is exercised in building, all nails neatly set, holes puttied, the whole well sanded, stained, shel-

varnish alone if you only give it time enough, and, after it does come, a stained finish is not to be compared with the deep rich color of varnished mahogany.

C. E. BRADLEY, Fall River, Mass.

to keep plates from sliding sideways, as shown on drawing. Of course, the front piece must be provided on all open shelves to keep their contents in place in a seaway. The tumbler shelf should have wood separators between the tumblers to keep them from smashing upon each other. Cups should be nested, as shown, and provided with separators similar to tumblers.

The drawing shows rooms for two rows of three jars each. These come in very handy for storing flour, salt, tea, coffee or anything that would be affected by dampness. Next in importance to the culinary implements are medicines, court plaster, bandages, thread, needles, etc., and two drawers are provided for these next to the jar shelf.

The upper shelf for books is self-explanatory. The top open shelf, if provided with a front railing piece, as shown on drawing, makes a convenient place for storing chart cases and charts.

The sizes given on the drawing will accommodate dishes, etc., for at least six persons. So much for the proportioning. For the construction of the box, I would say that it can be easily done by the average amateur. The sides, shelves and partitions should be preferably of the same hard wood about 1/2-inch to 3/4-inch in thickness. The shelves should be set into the sides by rabbeting 1/4-inch deep. The par-





# PRIZE CONTEST

titions can be merely nailed in place. The nails used on the sides and front pieces should be small brads, and should be countersunk a trifle below the surface for puttying.

The drawers are merely boxes made of  $\frac{3}{4}$ -inch white pine, and made to slide easily in place. The fronts of the drawers should be of the same wood as the rest of the rack. For the back, tongue and grooved stuff about  $\frac{1}{4}$ -inch or  $\frac{3}{8}$ -inch thick should be used.

For the finishing, fill the wood with good filler, after a thorough sandpapering with the grain, if you are going to have a natural finish. Two good coats of varnish will then be sufficient. The rack should be fastened in place with corner brackets (about 3"x3") at the top and bottom of each side-piece.

W. ELMER MOTZ, Philadelphia.

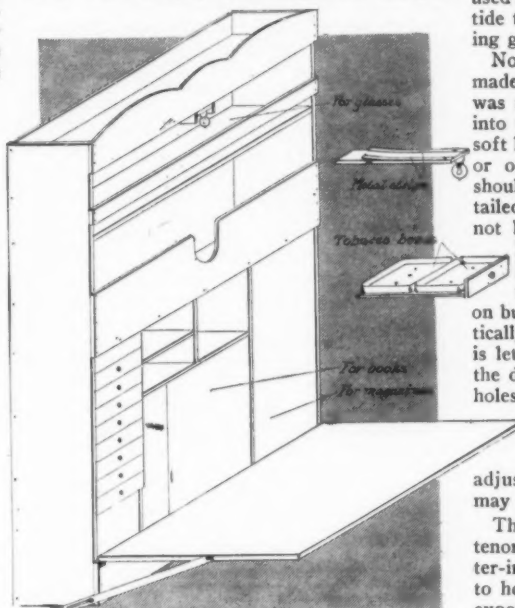
## A Cabin Desk.

A VERY useful wall-rack may be constructed from pine boxes, staining the finished article to match the cabin finish. In case the wood is purchased, white wood will be most satisfactory, as it is easily worked and readily takes a stain. Small drawers are very useful in a receptacle of this kind, but are usually difficult to make. These, however, may be easily made from discarded slice tobacco tins by mounting them with tacks on two pieces of thin wood in the manner shown. The wood should project beyond the tins about one-quarter of an inch on each side to engage the guides. The guides are made by making two parallel saw-cuts at the point where the bottom of the drawer is to slide and removing the stock between the cuts with a knife or chisel. The cuts need not be over one-eighth of an inch deep. It will be noted that the swinging cover is hinged three or four inches from the bottom of the rack. This is to allow the braces to be mounted from the outside, providing a maximum of space on top when the cover is being used as a desk, and also to provide means for retaining books, etc., in place when the cover is down. It is often necessary to mount a rack of this kind where the light is poor, but is easy to arrange a small battery lamp in the manner shown. The lamp is mounted on a strip of wood and slid into the

tery wires are attached to the screws. Thus the lamp is lighted when the slide is pulled out. It will be often found that dry cells too weak for ignition will answer the purpose for the short time that the lamp is used, but as the drain is so slight, two new cells will be found inexpensive. The batteries, if desired, may be placed in the space on top.

J. T. C.

The interior arrangement may be varied at will to suit the particular requirements of each case. For example, by making a few changes



J. T. C. suggests a folding desk with drawers made from tobacco boxes.

in design a most complete china and dish locker can be made, designing the size of each partition to fit some particular set of dishes or pan.

A glass front could also be provided for the more particular owners, and if this was arranged in small panes of leaded glass, the effect would be all the more pleasing.

Some owners arrange their switchboards on

## Uses Up but Little Cabin Space.

THE wall-rack or case described below was built for a twenty-eight-foot cruiser where every inch of space was valuable. To save a little more room no back was built on, but the case was screwed directly against the cabin side, the sides being shaped to fit the curvature of the cabin wall. A shelf divided this case into two compartments, the lower being used for pilot rules, steamboat inspection books, tide tables, etc.; the upper compartment holding glasses or other articles.

No dimensions are given; the case can be made any size or depth—in this one the depth was made small, so as not to project too far into the cabin. The frame is made either of soft lumber painted to match the cabin interior or of natural finished hard wood. Corners should be jointed together as shown, or dovetailed and slightly rounded. Glue alone should not be depended upon; fasten together with long brads and putty up the countersunk heads. The sides should be shaped to fit the cabin sides (straight if case is to be on bulkhead), so that the front will stand vertically. A thin, horizontal slot (Figs. 1 and 2) is let into the two side-pieces about one-third the distance down from top; through this slot holes are bored for screws to fasten the rack to the wall.

The shelf is mortised into the side-pieces, as shown, or it can be made adjustable or removable, or several shelves may be used.

The door is best made of oak or mahogany, tenoned together, glued and bradded; a quarter-inch rabbet is cut around the inside edges to hold the glass. If the case is to be in an exposed place and liable to damage, panels with oval glass can be used, as shown in right-hand panel of Fig. 4. This oval glass is much less liable to breakage than a whole pane of glass. The door should be hinged on one side, with hook or other fastening on the other side.

A thin ledge should be fastened along bottom inside edge of the case to prevent the books and papers from sliding out.

A pin-rail around the top adds a finish and can be used to store small articles behind, but can be left off, if not desired.

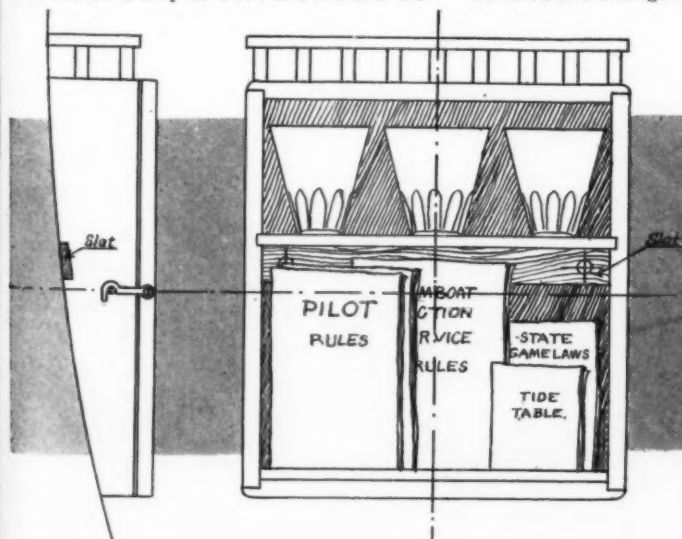


FIG. 1. Side Plan

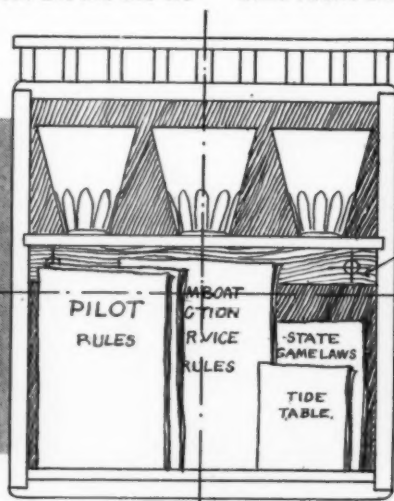


FIG. 2. Front, without door.

Mr. Parker's cabin rack holds all the odds and ends about the boat.



Fig. 3. Side, door

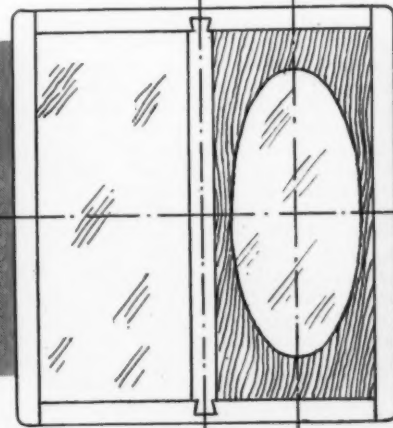


Fig. 4. Front, door.



rack in much the same manner as a drawer. Two brass slips attached to the lamp base slide against two screw heads when the slide is pulled out. The bat-

tery wires are attached to the screws. Thus the lamp is lighted when the slide is pulled out. It will be often found that dry cells too weak for ignition will answer the purpose for the short time that the lamp is used, but as the drain is so slight, two new cells will be found inexpensive. The batteries, if desired, may be placed in the space on top.

Other possibilities are so great in a case of this kind that the absolute arrangement depends upon the needs of each owner.

H. H. PARKER, Oakland, Cal.





# PRIZE CONTEST



## The Best Cabin Interior.

A Discussion of the Several Methods of Finishing, the Proper Kinds of Wood to Use, Painted or Varnished Combinations, Upholstering, etc.

THE PRIZE CONTEST—Answers to the Third Question in the September Issue.

### A Variety of Combinations.

(Prize Won—Sailing Lights from A. S. Morss Co.)

**I**N PLANNING the inside joiner work and finish of a cruising motor boat, the size and character of the apartments in question have much to do with the treatment to be chosen. The cabin of a raised-deck 36-footer cannot be successfully finished after the fashion of the social hall or music-room of a hundred-foot motor yacht. In the latter case rich mahogany paneling and deep blue plush upholstery, with Oriental rugs upon floor, and perhaps a bit of stained glass would be a characteristic combination. The ample size and adequate lighting of such a room makes this style of decoration appropriate and pleasing. Circassian walnut is also much favored for such luxurious interiors, while for the owner's stateroom, bird's-eye maple or white mahogany with light effects in hangings and upholstery are often specified.

While in the past solid mahogany interiors were frequently seen in small cruising boats of the better class, to-day it is recognized that such treatment is too heavy for a small apartment, making the limited space seem even smaller than it is, and reducing the amount of reflected light to an extent which, with the rather meager supply of daylight often met with in the cabins of small sea-going cruisers, renders the effect rather gloomy and depressing. Flemish or weathered oak and mission effects are more or less open to this same criticism. It must be admitted, however, that some of these cabins, when well lighted with electric dome lights at night, present a delightfully cosy and homelike appearance.

Perhaps the most sensible and, everything considered, desirable treatment of the salon of a small cruiser of from 30 to 36 feet overall length, is to use joiner work of white pine finished in paint of a tint just a trifle removed from dead white for the paneling, ceiling, transom fronts, carlines and under side of deck, combined with mahogany trim and doors. The spindle rails on locker tops, cushion rails on transoms, front of the narrow shelves above transoms, drawer fronts and doors are mahogany, the door leading into toilet often having a long bevel mirror in place of the upper panel. Drawer pulls, door handles, etc., may be of cut glass or brush (dull) brass. A floor of quartered oak, finished natural, is durable and handsome and should be waxed instead of varnished. A narrow Oriental rug may be used between the transoms. The upholstery is best of genuine leather as this wears well, is of handsome appearance, agreeable to the touch and withstands dampness. Pantasote, Chase leather, corduroy and plush are also good coverings and procurable at lower prices. Curled hair is a fine filling for cushions, but several less expensive substitutes are obtainable which are but little inferior. Various colors go well in such a cabin, the tint of the paint, of course, blending with the color of the hangings and cushions. The writer recalls one example,



which was very attractive, in which the transoms were upholstered in sea green leather; the silk window curtains were of the same color, while the paint was of white just tinged

with green. The paint was rubbed to an egg shell finish. Red cushions would light up well at night, giving the cabin a cheerful, homelike look. The paint in this case preferably being of ivory white, in egg shell finish. Simple flat, raised paneling is most often used, and elaborate effects are not considered in good taste, even upon the most pretentious yachts. Very little ornamental carving is seen upon the new boats. Leaded glass for locker fronts is often used and is both decorative and substantial.

The engine-room and galley are best finished in gray paint with a gloss, since this can be washed when badly soiled and at any time shows dirt but little. The color should not be so dark as to be sombre. Overhead, white may be used to lighten the apartment. The floor may be of hard wood and should be well laid with small joints, since this aids greatly in keeping it clean. Oiled or waxed finish is desirable. The toilet-room should be finished in white enamel with black and white checkered linoleum on the floor. Nickel or white-enamelled metal fittings are handsome and serviceable. In finishing a motor boat interior in natural wood when expense is an object, cypress makes an excellent material. It is not very dark in color; is handsomely figured, and stands moisture well. Georgia pine is also used and stands hard usage very well, making it an excellent finish for motor room or galley. These woods are usually filled and varnished in their natural color. Partitions are often staved up of ordinary T. & G. sheathing in place of panels when the cost is being considered carefully. These are blind-nailed, and, while not handsome, are of neat appearance and serve the purpose well.

Inside varnished finish should be filled and given at least two coats of good varnish (interior spar or something similar), being rubbed well between coats. At least three coats of paint will be required for the painted finish, the final coat often being rubbed to a dull finish in place of being allowed to retain its gloss.

It is usually true that the simplest interiors on sea, as on land, are the most pleasing and homelike. Any attempt at undue elaboration is apt to result in a meaningless, jumbled appearance and ornamental details are difficult to keep free from dust and dirt.

ALLAN O. GOULD, Portland, Me.

### A Matter of Personal Taste.

**T**HE interior finish and furnishings of a motor boat is worthy of considerable thought on the part of the owner, especially if he lives on board during the boating season.

White enamel is undoubtedly the most common, and is very good in cabins that are not very well lighted, however a little mahogany trim, finished bright or rubbed down to a dull finish, relieves the glaring white effect. In larger boats with skylights and plenty of light in the main cabin there is nothing handsomer than mahogany finished bright, then rubbed down to a dull finish. Next to this is California red wood, largely used to imitate mahogany, and it is so good an imitation that when properly finished only an expert can tell the difference. In treating mahogany, it is usual to give the bare wood a light coat of burnt Sienna stain which fills the pores and

brings it all up to the same color, then applying two or three coats of varnish, and killing the gloss between each coat by lightly rubbing down with fine sandpaper, makes an ideal finish. The last or finishing coat should be carefully rubbed down with pumice stone and water, using a soft woolen rag for the operation and then polish with wax.

Cypress and yellow pine are cheaper and are excellent woods for interior finish. They are easily obtained in almost any width desired and the grain when brought out is beautiful. Either of these woods is first class for the engine-room and galley and may be finished bright or flattened as desired. In the main cabin they also show up to good advantage.

Stains may also be used to advantage on trim, but should be used sparingly and if afterwards to be varnished an acid stain should be used rather than an oil stain, for acid stains take the varnish better.

Mahogany is unquestionably the best wood for built-in furniture for the saloon, although oak is often used and is very substantial, and can be stained with very pleasing effect.

Leaded pebbled glass in buffet and other small doors is very effective and will stand more slamming than plate glass.

For floor covering there is nothing better than good, heavy linoleum, especially for the engine compartment and galley, as it may be mopped up and easily kept clean. Rugs for the main cabin and staterooms are superior to carpets, being easy to handle when cleaning, and with the floors first filled and then varnished, they give a very neat appearance.

For transom berths hair-upholstered cushions, covered with corduroy, are most durable, and the dark green shades most desirable, while for the cockpit or outside use cork shavings or Kapoc filling covered with Moroccoline or Pantasote make excellent life preserver cushions that will not spoil from getting wet.

There are a number of sun-proof materials on the market guaranteed not to fade which come in a variety of colors and are most desirable for curtains and draperies. The shades of green blend well with any color woodwork, and are most popular. Antwerp blue is another color producing a most cheerful and homelike effect.

A pleasing change from the white enamel seen in most staterooms is obtained by painting with a delicate tint of green or blue, kept very light. In this case the trim and furnishings should be of white mahogany or other light wood with draperies of cretonne in gray, blue or green with very small figures or flowers.

The use of mirrors should be avoided except where convenience demands.

Pictures, unless the boat is large, look heavy and out of place and should also be avoided.

The interior hardware should be of brass in plain design, so as to be easily polished. Glass knobs for the doors are ornamental and give a touch of brightness to dark woodwork.

The color scheme for the interior furnishings and fittings of a boat is a matter of personal taste, but if the woodwork is finished so as to harmonize with the draperies, cushions, rugs, etc., or vice versa, one's cabin cannot fail to be artistic and attractive.

H. W. LOWREE,  
New York City.







The drafting room occupies the entire western half of the building with daylight on three sides.

## An Architect's Novel Office.

A Complete Up-to-Date Designing Plant on a Country Estate on the Hudson.  
How One N. A. Took His Business to His Home to the Benefit of Both.



The N. A.

**W**HEN one hears, as he often does, of the performances of such successful boats as Aeldgytha, Bunk III, Caroline, Kitsix, Gracelda, Martha and many others, he immediately connects their performances, in his own mind with the name of the designer of the particular craft in question, who is responsible for their excellent record. The reader very often wonders just

how the naval architect goes about his work of designing motor boats, what obstacles he has to contend with, and what tools and equipment are necessary for his success.

Mr. Morris M. Whitaker, known to a large majority of Motor Boating readers, as a most successful designer of motor boats, one who makes a specialty of nothing but this type of craft, and who until recently had his office on the 42nd floor of the Metropolitan Tower in New York City, believed that it should not be necessary, in order to successfully follow his profession, to be located in the center of a large city, and has proven that his theory is correct.

Moving only twenty-five miles away from New York City to the town of Nyack, long renowned for its shipyards and ship-building interests, Mr. Whitaker has designed and built his own plant, devoted exclusively to the production of motor boat designs of all types and sizes to meet the special requirements of his clients. Knowing from actual experience just what the necessary essentials are which make

up a successful establishment of this kind, we asked Mr. Whitaker to tell us why he finds that he can work so much more efficiently now than he could in his old establishment, and his reply was as follows:

"The naval architect's business is somewhat similar to the painter's or artist's, except that it has mechanical attachments, but it is a creative business; the working over of ideas and experience and putting them into concrete form from which they will later be built into wood and metal. It makes little difference where a business of this kind is located so long as the architect is within reach of those he does business with.

"After three years in the city, I found out that I had to go to see nine out of ten men with whom I did business except those at a great distance with whom I did business by correspondence, and analyzing the callers in my office, I discovered that most of them were people who wanted to sell me something or interest me in some proposition remotely bordering on my business. When I stopped to figure out the number of hours a day that were taken up to no purpose in connection with my business, it was surprising.

"There were many  
(Continued on  
page 42)



Mr. Whitaker's building, designed by himself, used solely for naval architectural purposes. It contains large drafting and blue print rooms, offices and consultation room.



One corner of the designing room, showing the naval architect in consultation with one of his draftsmen. Numerous models and photographs of his work adorn the wall.

# MARINE MOTORS

## The Elco Six-Cylinder 60.

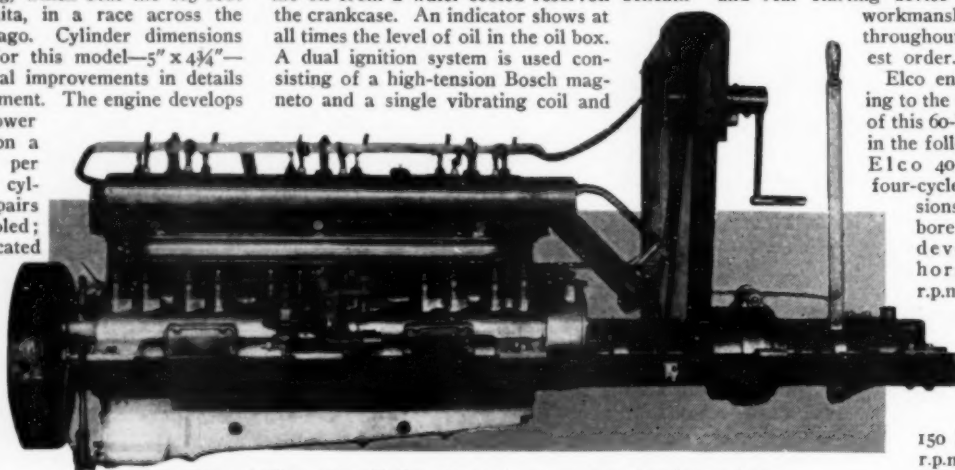
An Interesting Light Weight, High Powered Motor of the Auto Marine Type. Dual Ignition, Automatically Regulated Lubrication and Other Refinements.

**T**HIS six-cylinder 60-70-h.p. Elco marine engine, constructed by the Elco-Bayonne Co., Bayonne, N. J., is a successor to the one installed in Bug, which beat the 185-foot steam yacht Helenita, in a race across the Sound two years ago. Cylinder dimensions remain the same for this model—5" x 4 3/4"—but there are several improvements in details of design and equipment. The engine develops her rated horsepower at 1000 r.p.m. upon a weight of 10 lbs. per horsepower. The cylinders are cast in pairs and are water cooled; all valves are located on one side, the camshaft as well as the pump shaft and idler gear being mounted on imported ball bearings. The one-piece crankcase is cast of very light but extremely tough

aluminum alloy. Lubrication is effected by splash, a constant level of oil being maintained in the crankcase by a gear pump which draws the oil from a water-cooled reservoir beneath the crankcase. An indicator shows at all times the level of oil in the oil box. A dual ignition system is used consisting of a high-tension Bosch magneto and a single vibrating coil and

storage battery. The exhaust manifold is water jacketed, the circulating water being carried out through the exhaust pipe. Clutch and rear starting device are fitted, and the workmanship and materials throughout are of the highest order.

Elco engines, built according to the same general design of this 60-h.p. motor are made in the following horsepowers: Elco 40-50, four-cylinder, four-cycle, cylinder dimensions of which are 5-inch bore and 4 3/4-inch stroke, developing its rated horsepower at 1,000 r.p.m., and the Elco model "150," four-cycle, having six cylinders of 7" x 6 1/2" bore and stroke, developing its rated 150 horsepower at 1,000 r.p.m. upon a weight of ten pounds per horsepower.



Port side of Elco six-cylinder, 60-70 h. p. motor showing valves all located on one side, and aluminum crankcase.

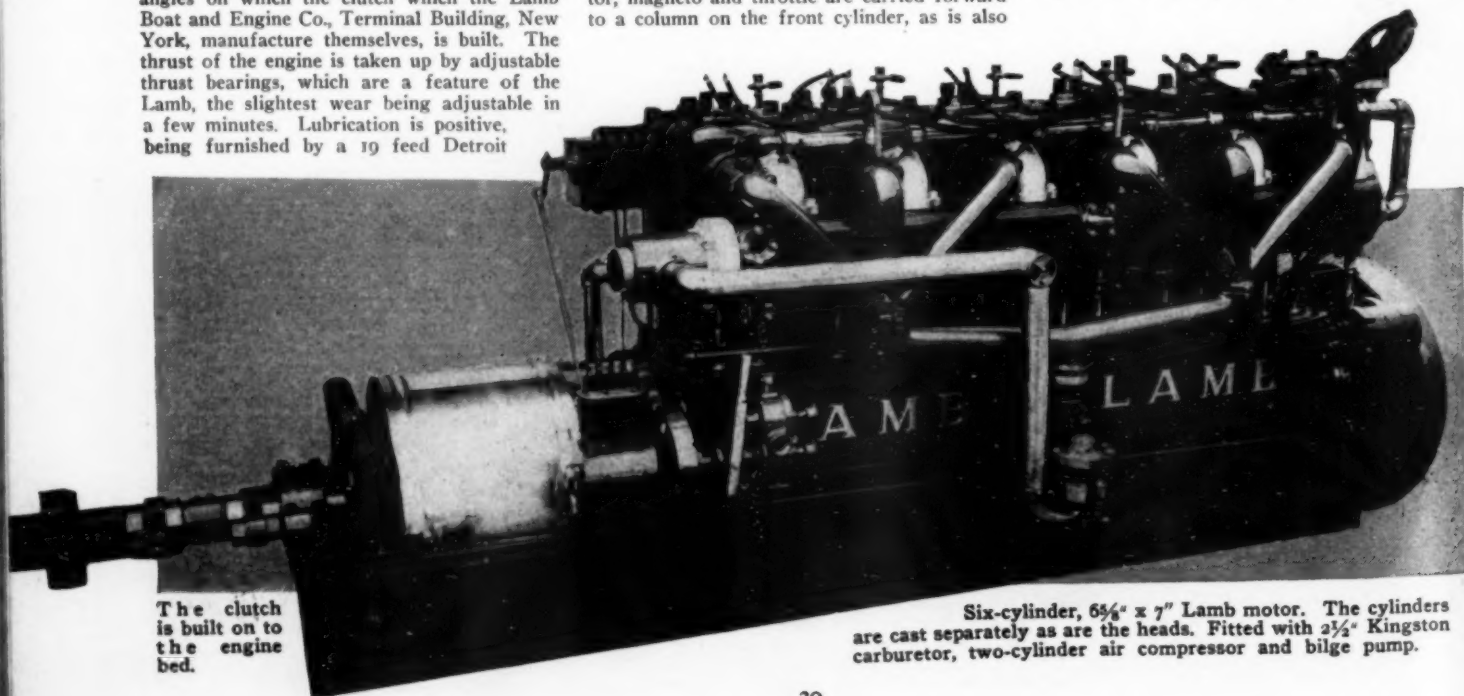
## The Heavy Duty Lamb.

With Accessibility to All Moving Parts and an Adjustable Thrust Bearing as Leading Features. Equipment Comprising Double Ignition, Air Compressor and Bilge Pump.

**T**HE Lamb six-cylinder, 60-h.p. engine, cylinders, 6 5/8" x 7", is a heavy-duty motor with a normal speed of 450 r.p.m. The cylinders are cast separately as are also the heads. Water circulation from cylinder to head is by-passed around the cylinder and head joint. The engine is mounted on steel angles on which the clutch which the Lamb Boat and Engine Co., Terminal Building, New York, manufacture themselves, is built. The thrust of the engine is taken up by adjustable thrust bearings, which are a feature of the Lamb, the slightest wear being adjustable in a few minutes. Lubrication is positive, being furnished by a 19 feed Detroit

mechanical force feed lubricator, ratchet-driven off the camshaft at one-half engine speed. The engine is furnished with two independent sets of ignition—dual system Bosch magneto to one set of plugs and a separate system through distributor coil and batteries to another set. The controls for the distributor, magneto and throttle are carried forward to a column on the front cylinder, as is also

the reverse lever for the clutch. One of the strongest features of the Lamb construction is the accessibility of every moving part. Every part is made in a jig and is interchangeable. Every attention is given to the details of construction, and the thorough testing out of the engine before it is painted and finished.



The clutch is built on to the engine bed.

Six-cylinder, 6 5/8" x 7" Lamb motor. The cylinders are cast separately as are the heads. Fitted with 2 1/2" Kingston carburetor, two-cylinder air compressor and bilge pump.



# The Three-Cylinder Wolverines.

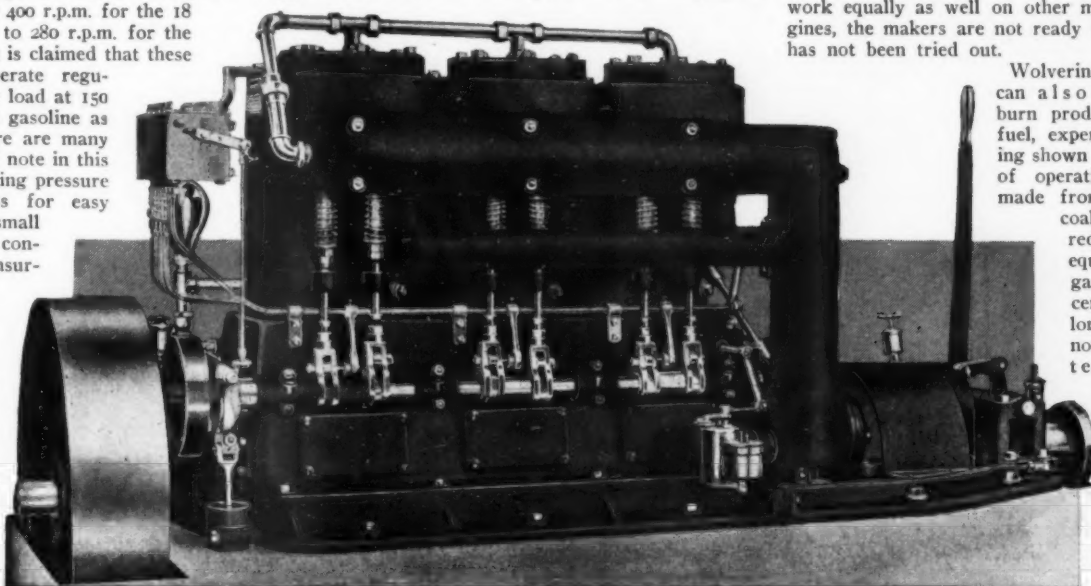
The New Models for 1914 Which Are Equipped to Use Kerosene without Preliminary Heating. Pressure Relief Cams for Easy Starting—A Patented Ignition Timing Device.

**W**OLVERINE three-cylinder, four-cycle marine engines, made by the Wolverine Motor Works, Bridgeport, Conn., are constructed in a variety of horsepowers varying from 18 to 100. The number of revolutions per minute at which each engine develops its rated horsepower ranges down from 400 r.p.m. for the 18 h.p. engine to 280 r.p.m. for the 100 h.p. It is claimed that these motors operate regularly under load at 150 r.p.m. with gasoline as fuel. There are many features of note in this line, including pressure relief cams for easy starting, small units of construction insuring low cost of replacing parts, and a patented ignition timing device, but perhaps the most interesting is an attachment which it

is expected will be fitted on all 1914 Wolverine motors for the use of kerosene without preliminary heating. It is claimed for this device that it will reduce the quantity of oil used per horsepower and will give to the engine great flexibility—even greater than with gasoline; that the engines can be manipulated

at high and low speeds with absolute certainty that they will not stop, and it is also said that it can be run as low as 95 r.p.m. carrying full load. Another advantage pointed out is that it operates without the formation of carbon deposit. It is built to apply to all sizes of Wolverine engines. Whether or not it will work equally as well on other makes of engines, the makers are not ready to say, as it has not been tried out.

Wolverine engines can also be fitted to burn producer gas as fuel, experiments having shown that the cost of operation on gas made from anthracite coal has been reduced to an equivalent of gasoline at 2 cents per gallon. There are now about fifteen installations of these engines operating on producer gas, and their users claim that they give a **h s o** - lute satisfaction.



The 1914 three-cylinder, four-cycle Wolverine motor is built in sizes varying from 18 to 100 h. p. It will be equipped with a device designed to insure even running at all speeds on kerosene.

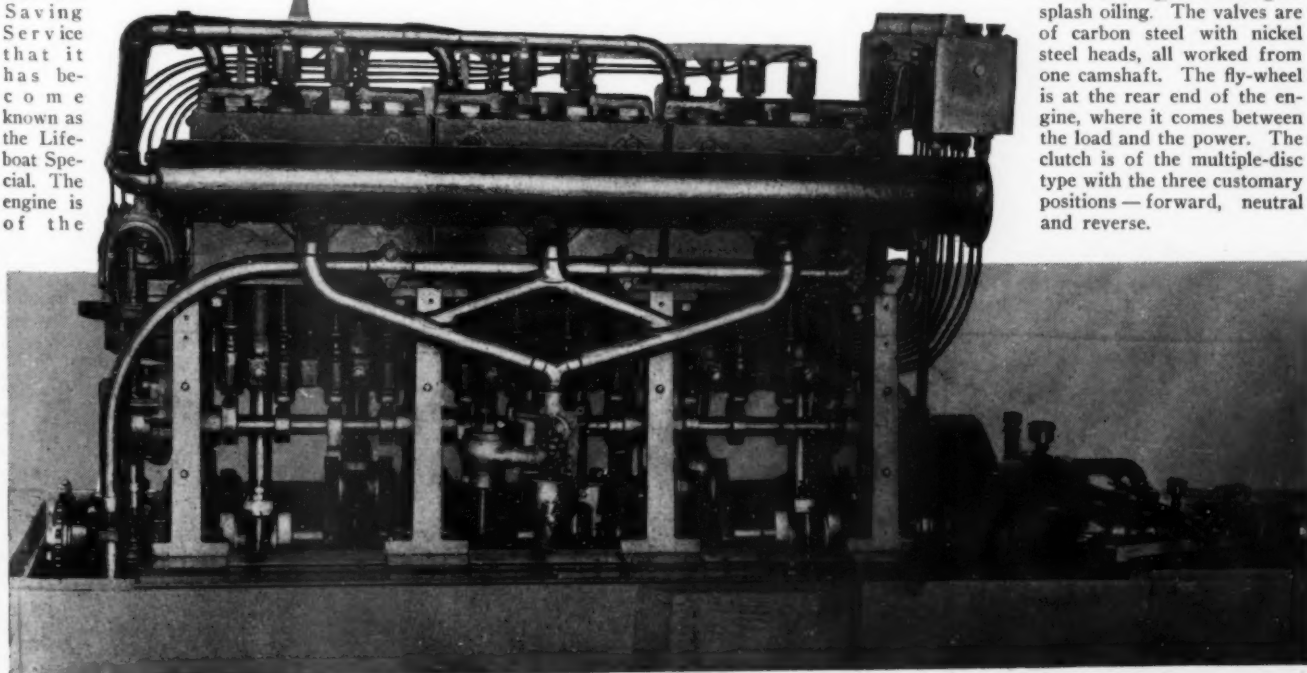
## Holmes Life Boat Special.

Model K, a Six-Cylinder 35-40 h. p. Medium Weight Engine Which Is Used Largely by the U. S. Life Saving Service. Bearings Half the Diameter of Cylinders, Removable Splash Plates, etc.

**M**ODEL K, the six-cylinder, 35-40 h.p. engine manufactured by the Holmes Motor Co., West Mystic, Conn., has been used so largely by the U. S. Life Saving Service that it has become known as the Life-boat Special. The engine is of the

long-strong type,  $4\frac{1}{2}'' \times 6\frac{1}{4}''$ , with bearings of exceptional size, being one-half the diameter of the cylinders. The cylinders are cast in pairs, open on three sides, and the water-

jacket is carried below the top of the pistons when on the bottom center, insuring ample cooling. Lubrication is forced-feed automatic to all main bearings, pistons, crank boxes and thrust bearing, there being no splash oiling. The valves are of carbon steel with nickel steel heads, all worked from one camshaft. The fly-wheel is at the rear end of the engine, where it comes between the load and the power. The clutch is of the multiple-disc type with the three customary positions—forward, neutral and reverse.



Holmes Model K Life Boat Special with splash plates removed showing accessibility of all moving parts. With the plates in place, the carbureter draws its air through them, all smoke, foul gases, splash oil, etc., being drawn from within the base and consumed.

# Helpful Hints *for* Motorboat Men

## Rubber Shoes.

Rubber soled shoes, while admirable in conserving the varnished surfaces of a boat are mighty slippery when covered with oil or grease.

## Makeshift Gaskets.

A temporary repair may be made in case of a broken cylinder head gasket by using the brim of an old felt hat, cut to fit. A double layer of cardboard coated with shellac is the more usual repair.

## Double-throw Switch.

If you run on batteries alone you will conserve their power by using two sets connected to a double-throw switch. Get in the habit of switching from one set to the other on the striking of the clock.

## It Is a Good Plan

To have an auxiliary water intake pipe installed an inch or so below the waterline for use in shallow, muddy water. Such a fitting may save many an hour otherwise spent in cleaning out water jackets and connections.

## Refractory Petcocks.

Brawn is not needed in turning refractory petcocks. Employ persuasive methods by using oil or tapping lightly and you will not find your relief cocks open with broken handles at a time when they should be shut.

## Keep the Horn Sacred.

Don't let inquisitive people sound the horn of your boat. Promiscuous signaling on land does no harm, but remember that at sea the short, oft-repeated note is a sign of distress, and keep in mind the boy who called "wolf."

## A Hard "Leak" to Find.

If your boat has a slight list to one side owing to uneven disposal of passengers or equipment do not fill your gasoline tanks to capacity as the troublesome fluid will flow out the air vent in the lower tank and may cause considerable bother in looking for the "leak" when the trouble is experienced for the first time.

## Anchoring for the Night.

In anchoring overnight in narrow channels it is well to throw out ground tackle bow and stern both. Otherwise the changing tide in the night may deposit your boat at a precarious angle on a mud flat, where on arising in the morning to make an early start you will find yourself involuntarily anchored for any number of hours up to six.

## It Seems Almost Unnecessary

To advise against using cockpit awning as a carryall, yet many motor boatmen coil their anchor lines there and lash sprit, boat-hook and spare oars on its inviting surface. The awning stanchions are not built for such extra service, yet some careless ones further abuse them by making the dinghy fast to them, and using them to support their own weight in getting aboard or climbing around the boat.

## Spare Batteries.

Always keep an extra lot of batteries on hand—new if possible—although old ones will sometimes help you in a tight pinch. In an emergency make a selection of the best of the old ones and string them in multiple series with the set which has gone back on you. The increased amperage should suffice to get you home.

## Sticking Electrodes.

One of the disadvantages of some make and break ignition systems is the proneness of the movable electrodes to gum and stick. The remedy for this is a liberal application of kerosene, but care must be taken that the oil cup does not touch the igniter and cause a short circuit, as the resultant spark may fire the warm kerosene and create a lively blaze.

## Lubricate the Thrust Bearings.

The small-boat owner who is about to install a clutch to take the place of solid shaft or reversible propeller should be careful to select one having adequate means of lubricating the thrust bearings. An oil hole at this important place should not be tolerated as the oil will fly out almost as fast as it is poured in, leaving the balls to heat up and crush. A grease cup should be provided.

## Deflecting the Compass.

Be careful to keep equipment of iron or steel construction away from the vicinity of the compass. A riding light inadvertently set near the needle may throw it off two whole points, while the steel bands of a suitcase hurriedly stowed under the cockpit flooring have been known through the medium of a deflected compass to run a boat out of sight of land in an all-night coastal passage.

## Don't Put Your Trust in Buoys!

If for any reason you are shy your storm anchor don't venture out in a strong tidal current, trusting to luck that nothing will happen, or if it does that your light anchor will hold you. It is doesn't, your last resort is a buoy, and while Uncle Sam does not forbid your tying up to his buoys in cases of dire necessity it is a practice fraught with danger to yourself and other traffic.

## Weeds and Weedlesses.

In the newly opened route across the Florida Everglades weeds of a particularly clinging nature known locally as "nigger wool" will be experienced more than once. One man making the trip across the state last winter employed a Bahama negro for the sole purpose of diving under and freeing the wheel when it became caught in the grip of this aquatic plant, but most people prefer to take the precaution of fitting weedless propellers.

## Running Strange Inlets.

In at least one instance you can take local authority in preference to the government charts, and that is in the matter of the depth of water in the inlets along the Atlantic coast. This depth may change over night in a violent storm, and make a dangerous passage where formerly there was a good channel. So in running strange inlets or those which you have not tried for some time always take the advice of local fishers or others who seem competent to direct you.

## Leaking Above the Waterline.

Excessive weight aft in a boat filled with an outboard rudder will often force the stern down so that the pintle hole will be under water when going full speed. This pintle hole being above the normal water line is not always perfectly caulked, and so when submerged may cause a leak which is hard to find, since with the boat at rest the hole will still clear the water. A good way of stopping this leak temporarily is to pack wicking and candle wax or putty tightly around the pintle.

## Keeping the Gas Line Clean.

Copper tanks are well worth the extra cost, as there is no danger of their inside surfaces flaking off and clogging the gas line. Dirt and water will find their way into the tanks, however, unless extreme care is exercised in taking on fuel, and it is necessary to have a screen or filter installed in the line to keep foreign matter from clogging the carburetor. The filter should be easily accessible and fitted below a cock for turning off the gasoline during its periodic removal and cleaning.

## Digging a Channel.

A scheme that is not generally known is resorted to by some Florida boatmen for making a passage through shallow spots in the channel. When the sandy bottom has shelved up so that the boat will make no further head-

way its crafty skipper backs off, turns around, throws a kedge well astern of his new position and with his propeller going full speed forward digs the channel out to the required depth by hydraulic force, after which he either hauls through on the kedge, or heads about again and goes through in style, bow first.

## In Most Cases Follow the Chart.

In traversing inland waters like Chesapeake Bay it is a good plan to stick pretty close to the ship channel, for though there may be good water for a shallow draft boat further inshore, tidal conditions may make it dangerous. For instance, the lighthouse off Smith Point, Va., at the mouth of the Potomac River is fully three miles offshore, while there is plenty of water on the chart a mile inshore from it. But a strong ebb tide and an east wind will stand this eight or ten feet of water on end and make it extremely unpleasant for a small boat.

## Knocks, Regular and Irregular.

In locating a knock which does not occur at every revolution of the crankshaft look first to the valve operating mechanism. Here a cam with a chipped face will hammer the valve plunger at each lifting of the valve, and therefore knock at every other revolution of the fly-wheel. Should the sound be intermittent with two or three taps and then a pause, the trouble can be definitely located in one of the plunger rollers. To find which cam or roller is defective proceed by sense of touch, grasping tightly each pushrod in turn. If this method fails the last resort of removing each valve in turn and holding the plunger away from the cam while the engine is rotated will prove effective, for the knock will cease during the time the broken part is kept away from contact.

## Pouring Oil from Large Vessels.

Those who have succeeded in pouring oil out of wide-lipped receptacles into the bilge when the intention was to confine its flow to a small funnel will appreciate the following hint: Let some one hold the forefinger upright against the rim of the funnel and then let another pour the oil slowly into the funnel so that the stream comes into contact with the up-raised finger. The oil will follow the finger until it reaches the funnel, when its course will be diverted in the desired direction.

## Ether for Motor Starting.

To make an effective priming mixture for use in cold weather use one part commercial-washed ether to one part gasoline. Keep mixture in corked priming cup and when priming remove cork and squirt about a quarter of an ounce into each cylinder. The motor will usually start on the first turnover. The washed ether costs 35 cents a pint and comes in sealed cans.

## Valve Springs.

Valve springs which have become weakened from long service or overheating of the motor may be strengthened by placing a number of washers over the support plate. Care should be taken that all valve springs in a motor be of equal strength. Broken springs may sometimes be repaired temporarily by inserting a washer at the break, making, in effect, two separate springs operating as one.

## Dirty Motors.

An inspection of the average gasoline motor in the small boat which is not presided over by a loving enthusiast or a paid hand will reveal an engine which looks as if it had been given a bath of dirt and oil when first installed and not been touched since. The ignition wires will, like as not, be found saturated with oil and ready to waste current whenever they come into chance contact with metal parts, and the air intake to the carburetor will probably be found moist and dirty. These things spell a loss of power, and are indicative of a lack of respect for the machine, whose duty it is to take you "there and back" in safety.



# DEVICES AND STUNTS.

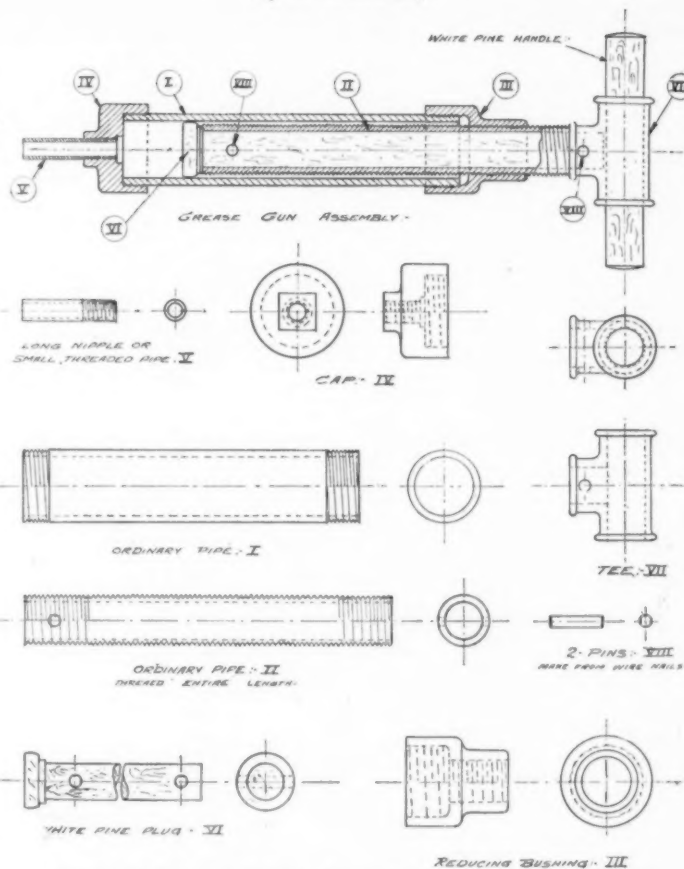
[This new department is to be a regular feature of MoToR Boating in the future, and we ask our readers to send us photographs or sketches with descriptions (of no more than three or four hundred words) of unique devices for or improvements in their boats which they have made themselves or had made for them. We will pay \$5.00 each for all items of this kind with the accompanying photographs or sketches which we use, and the more who send in material the better we shall like it, and the better the department will be.—THE EDITOR.]

## How to Make a Grease Gun.

By C. E. Bradley.

**A**N EFFICIENT grease gun is a desirable accessory to have aboard the boat, especially if the craft is equipped with either a gear set, reverse gear, clutch, flexible joint or ball race that constantly requires a non-fluid or hard lubricant. To inject the grease properly with the hands at these places is a rather difficult and disagreeable job, owing to its viscosity (sticky state). The task is greatly lightened by the use of a serviceable grease gun and this can readily be made from the short lengths of ordinary pipe (either brass or iron) and discarded pipe fittings lying loose about the boat-house.

The accompanying sketches are intended to convey an idea as to the appearance of the assembled gun and the details that complete its makeup. Fig. 1, the body, is a piece of 18" pipe, from 4 1/4" to 6" long, threaded for a short distance at each end. The interior or bore of this pipe should be relieved of scale and made as smooth as possible. To do this, force a piece of wood covered with oil and emery back and forth within the bore. The plunger, Fig. 2, is a piece of 3/4" pipe from 6 1/2" to 8" long, and is threaded its entire length. Fig. 3, a 1 1/4" x 3/4" reducing bushing fits one end of the body, the smaller end of



Details of grease gun made from pipe fittings by Mr. Bradley.

the bushing receiving the plunger. The other end of the body is closed by a 1 1/4" pipe cap. The cap is drilled, tapped and counter-bored, as shown, to receive Fig. 5, a long 1/4" nipple or a piece of small, threaded pipe of length to suit. Fig. 6 is a plug whittled from a piece of pine wood, the head of which is a snug fit to the bore of the body, with the stem or shank a drive fit to the bore of the plunger. This stem should be left about 1 1/4" longer than the plunger pipe. For a handle of a 3/4" tee, Fig. 7, can be drilled out to the root of the thread and fastened to the end of the stem of the wooden plug. A piece of white pine driven through the tee crosswise gives ample leverage for screwing the plunger in and out. Two pins, Fig. 7, made from wire nails should be driven through the stem of the plug and headed over one at the inner end and through the plunger, the other at the extreme outer end and through the tee.

To fill the gun, unscrew plunger, Fig. 2, until head of the plug, Fig. 6, is close up to the reducing bushing, Fig. 3, then unscrew the bushing, Fig. 3, from the body, Fig. 1, which is next nearly filled with grease and the bushing replaced. The plunger is then screwed in by turning on the handle at Fig. 7.

## Building a Boat Hoist.

By L. R. Kelley.

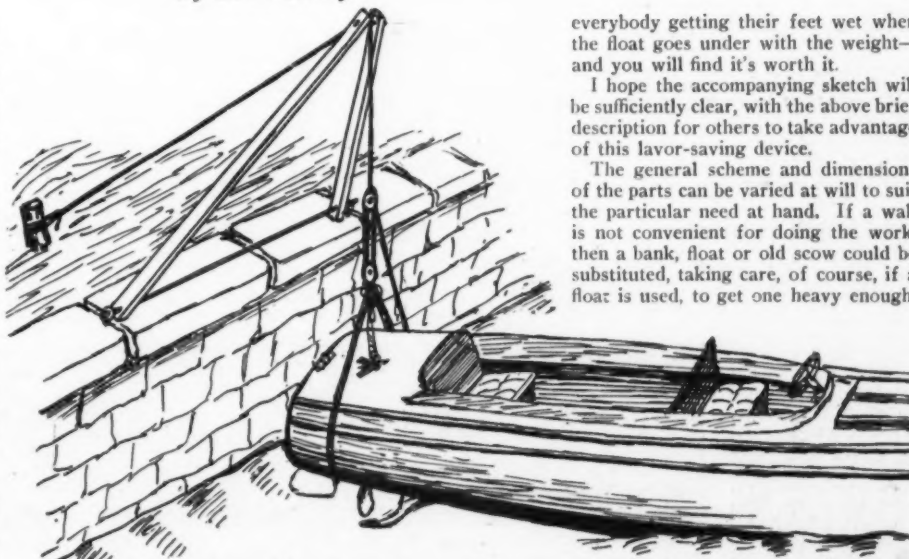
**Q**UITE often during the season some boat has to be hauled out for adjustment or renewals to rudder, stuffing box, propellers, etc., and this is easily accomplished by the hoist erected on a wall adjoining a boathouse here, which does not possess the advantage of being situated on tide water.

Two 4" x 6" timbers are bolted together at the top, the bottom ends securely anchored on the wall, after being spread apart to resemble a big inverted "V."

The top is fastened by a rope to a post with sufficient slack to allow it to lean out about 4 feet into the water.

It is usually a one man's job to slip a sling around the stern of a boat, adjust the ropes, and by means of double-tackle blocks, hoist the stern clear out of water until sufficient height has been reached that he can run a rowboat under or alongside, and do the necessary fixing.

A small charge is levied for the use of this hoist, but compare it to the usual method—getting enough help together, then pulling out usually on to a float that was not made to stand the weight, and



Scheme for raising the stern of a boat, suggested by Mr. Kelley.

everybody getting their feet wet when the float goes under with the weight—and you will find it's worth it.

I hope the accompanying sketch will be sufficiently clear, with the above brief description for others to take advantage of this labor-saving device.

The general scheme and dimensions of the parts can be varied at will to suit the particular need at hand. If a wall is not convenient for doing the work, then a bank, float or old scow could be substituted, taking care, of course, if a float is used, to get one heavy enough.



### The Races at Kansas City.

Kansas City was put on the motor boat racing map, and the muddy waters of the Missouri were stirred by the fastest boats that ever rode her surface when the Kansas City Yacht Club staged its first regatta on the 26th and 27th of September.

To say that this new town in the boating game was enthusiastic would be putting it mildly, as the bugs were madly excited during the whole two days, and the way the town folk wended their way to the river bank during the two days to see the speed kings in action was marvelous. They were there in the thousands, probably twenty thousand in all, and of these twenty thousand all went away converted to the speed boat game. And there were some real speed kings of the motor boat world at this regatta at that, for our old friend, Oregon Kid, had traveled all the way from Buffalo across the prairies of Illinois and Iowa for this meet, while Baby Reliance and Tango were also there to try with Kid for the speed supremacy of the "Old Muddy."

The big race of the meet was the Free-for-all, open to all boats, and for cash prizes amounting to \$1,200. This race was run in two heats, one each day. The rest of the program was made up of races for local boats only, together with some swimming and canoe races.

The first heat of the Free-for-all was pulled off under exciting circumstances. At the upper turn of the course, and just above the judge's stand, the undertow of the current was so strong that Baby Reliance had hard work in making the turn, and in doing so, threw up great clouds of spray and water, while Kid, being caught by the undertow, was spun around and around like a top. The heat resulted in Baby capturing first, with Tango second and Kid third. On Saturday the final heat found all three boats at their best, but after a neck and neck race for the first round between Kid and Baby, Kid was seen to be experiencing motor trouble, so that the heat and race were easily won by Baby, Tango having pulled loose her step-up gear earlier in the race. So Baby won the big prize, with Kid second and Tango third. No official time was given out as the buoys had to be altered before the race to enable Baby Reliance to make the upper turn in safety.

After the Free-for-all, Baby and Kid gave some exciting exhibitions of speed on the mile trials that fairly brought the spectators to their feet. On the first trial on a run of a mile up and down stream, both boats tied as to time, but on the final, Oregon Kid succeeded in beating Baby with a speed of 50.79 miles per hour, over an accurately measured course, taking the average time with and against the current. This is the fastest official mile ever made in the west, if not in the country. A handsome silver loving cup, presented by the Kansas City Star, was awarded Kid for its record breaking mile.

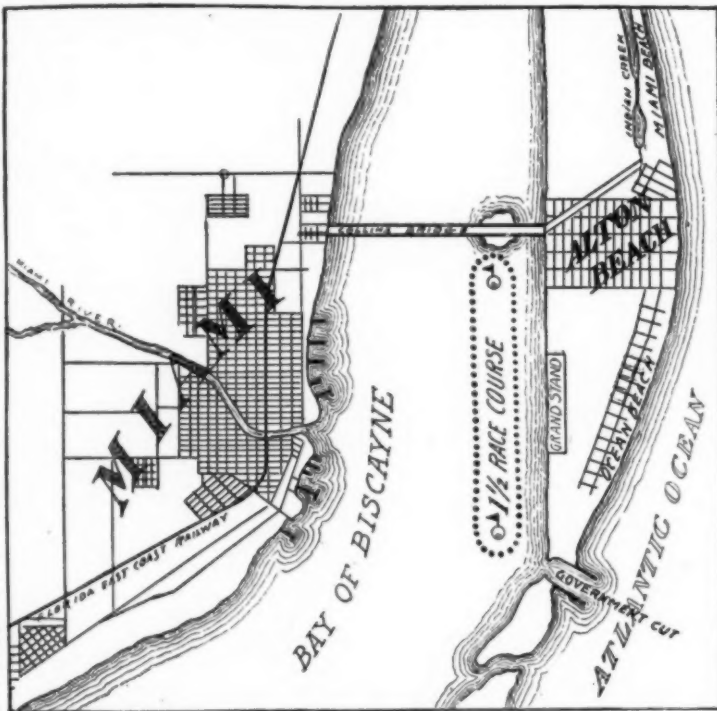
As a result of the regatta, and the great amount of enthusiasm shown, a bigger and better meet will be staged next season. The members of the Kansas City Yacht Club showed themselves to be royal entertainers and a live bunch of boatmen.

### Miami Midwinter Regatta.

On January 8th to 10th, 1914, there will be held at Miami twelve races over inside and outside courses for prizes in trophies and cash totalling more than \$5,000. The entrance fee for all but five events will be \$50 each, but where boats are shipped more than four hundred miles the entrance fee will be returned and \$50 allowance made on freight. Boats will be unloaded free, water stalls will be furnished free, and lifting hoists and other conveniences, as well as assistance will be given. The chief race will be the Miami Midwinter Championship, which carries with it prizes of \$1,000, \$500, and \$200, and this will be held in four heats of twelve miles over the inside course. The first

three heats in this race also carry prize money, and no boat will be eligible for the final heat unless it has started in at least two of the first three heats. There will also be races for cruisers under 20 miles per hour, cruisers over 20 miles per hour, and yacht tenders, a bang-and-go-back race, a one-mile Free-for-all for boats having shown better than 40 m. p. h. in the previous races, etc. Miami is the winter Mecca of American yachtsmen, and it is expected that the regatta will have many entries and be well attended.

the finest racing week ever held in the South. He states that he has already received actual promises of entry of five boats capable of making better than 40 miles per hour, and that some of these have records of above 45 miles. Entry blanks will be out in a few days. The titles to be raced for are the "Southern Championship" and the "Speed Championship of the South," and everything possible will be done to entertain the visiting yachtsmen during their stay in St. Augustine.



Map showing Miami, a part of Biscayne Bay and the 1 1/2-mile race course over which the Miami Midwinter Championship Races and others will be run on January 8th, 9th, and 10th, 1914.

### Announcement of the St. Augustine Races.

At a meeting of the St. Augustine Power Boat Club on September 24th, the dates of the annual spring races of the club were decided upon. The races will be held every afternoon during the week of March 30th to April 4th, 1914, and the club is offering trophies without any strings to them, to the value of \$1,500. A boat house is being built equipped with stalls and chain hoisting blocks for the convenience of owners of racing craft, free of charge. For ease in handling boats shipped by rail to St. Augustine there is a crane capable of handling 10 tons, and loading and unloading will be done free of cost to all owners. If boats are shipped by steamer to Jacksonville the club will tow them to St. Augustine at its own expense and then tow them back to Jacksonville the same way.

Charles F. Hopkins, Jr., secretary of the Power Boat Club, expects that the 1914 contests will make

eight minutes' handicap over the classic New York to Ardsley course and return, start to be made from the Columbia Yacht Club, a side bet to be given in plate, and a dinner to be given by the loser at the Columbia Yacht Club immediately after the race.

Both boats started at 4 p. m. from the Columbia Yacht Club on Friday, September 19th. Gunfire, Jr. was handled by Mr. H. W. Patterson and Al Henken-seifen, and Cinderella by Mr. James Simpson and Jack Schreier. Mr. C. F. Chapman was the official timer. A good start was made, Gunfire, Jr. going over the line ten seconds after the firing gun, with Cinderella fifty or sixty feet in the rear. Cinderella chose the Jersey shore, while Gunfire, Jr. followed the New York shore. When at Spuyten Duyvil, Gunfire, Jr.'s motor blew out a petcock on the flywheel cylinder, which slowed her down 40 r. p. m. Near Hastings at full speed she ran into the swells of the Str. Ben Franklin, and the waves knocked off two air ventilators and crushed the metal hood over the motor. Shortly after the start

Cinderella's motor became loose, resulting in a loss of some speed and she turned the mark at Ardsley one minute and forty-five seconds ahead of Gunfire, Jr. The day was not ideal for racing, the water being very rough, but at 5:16:23 Cinderella crossed the finish line, and Gunfire, Jr. followed her two minutes and sixteen seconds later, winning the race because of her 8-minute handicap.



Rocallana, the club boat of the Flat Rock Motor Boat Club has captured 12 prizes out of 12 starts.



# From Motor Boating Readers

A Department for the Exchange of Ideas and the Discussion of Questions of General Interest.  
Editorial Opinion on a Number of Questions Submitted by Readers of the Magazine.

MoToR BoatinG's columns are open to its readers, not only for asking questions, but for placing before them other readers' ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letters and answers where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through the correspondence department, readers of the magazine may be of direct aid to one another in solving the problems of motor boating.

## Gearing the Propeller Shaft.

To the Editor MoToR BoatinG, Sir:

I want to know if it is possible to take an engine turning a 16-inch x 22-inch wheel 700 r.p.m., and gear the propeller down on a ratio of two to one and still get 700 r.p.m. from the engine and 1,400 r.p.m. from the propeller. A motor boating friend of mine and I are having a hot dispute whether this can be done or not. If you can gear a propeller with a ratio of two to one, and still will the engine turn up the same r.p.m. as with direct drive? If not, how much will an engine drop down in speed, if it turns a 16-inch x 22-inch wheel 700 on direct drive, and you gear it two to one, how many will it turn? I am an interested reader of MoToR BoatinG, and I think it the best Motor Boat book published.

R. C., Englewood, Fla.

[We would say most emphatically that it would not be possible to obtain a speed of 1,400 r.p.m. with a 16 x 22-inch propeller, no matter what gear ratio was used, if the motor was only capable of 700 r.p.m. when connected directly to the propeller shaft.]

No more power can be obtained by the use of gears than the motor originally has; in fact, considerably less power will result with the use of gears on account of the considerable friction that exists in this form of mechanism; or, in other words, only as much work can be done in one case as in another, neglecting friction. For example, as work is the product of force times distance, then, if the force is 10 lbs. at 700 r.p.m., it will only be 5 lbs. at 1,400 r.p.m. That is, if you try to use a 16 x 22-inch wheel with a gear ratio of 2 to 1, then theoretically, at least, the propeller would turn at 700 r.p.m., and the motor at 350 r.p.m. Practically, this would work out a little differently, for instead of having the same power developed by the motor at 350 r.p.m. that is developed at 700 r.p.m., you would have considerably less power and a decidedly smaller number of revolutions of the propeller and motor would result. You cannot get something from nothing; neither can you get increased revolutions without increasing the power.]

## Using a Motor as a Generator.

To the Editor MoToR BoatinG, Sir:

I have a 1/2 h.p. reversible motor which I desire to use as a generator in firing my engine and lighting my boat. I am informed that this machine will do this work and will develop 10 amperes on 6 volts. This should be sufficient to light three lamps in addition to igniting the engine. As a motor it is fine and I have had several competent men on the machine, but they could get no results as a generator. Machine has a friction pulley which is turned by the fly-wheel of the engine. It runs well on six dry batteries. Can you place me aright as to the correct placing of brushes and changes of wiring necessary to produce the desired result?

J. M. C., Lynchburg, Va.

[We are inclined to doubt the feasibility of trying to obtain 10 amperes at 6 volts from a machine that is designed to run on 6 dry cells. As you have not given us the amperage at which this machine was designed to run as a motor on dry batteries, we cannot tell you whether it will be possible to get 60 watts out of the machine as a generator.]

In order to make it run satisfactorily at all as a dynamo, there are several things that must be taken into consideration. In the first place, if the field is of the laminated variety, you will not be able to make it pick up unless the field is separately excited by means of an external source of E.M.F. If the field is of the solid kind, the quality of the iron core may be such as to prevent it running as a generator; that is, there may not be enough residual magnetism left in the field to make it pick up.

Most small motors designed for dry batteries

are series wound; that is, the field and the armature are connected in series, but for the successful operation as a generator, it should be shunt wound, or, in other words, the two terminals from the field magnet should be carried to the two brushes and the current taken off from the brushes also. Of course, you know that in all probability the machine must be turned in a certain definite direction to generate, and, if turned in the opposite direction, it will fail to give off any current. If, in your case, the conditions are such that you can turn it in one direction only, which happens to be the wrong direction, then, to make it operate, the relative connections between the field magnet and the brushes must be reversed; that is, if the right-hand field terminal is connected to the top brush and the left-hand to the bottom brush, this must be changed so that the right-hand field terminal will be connected to the bottom brush, and the left-hand field terminal to the top brush.

You might also try operating your motor with field separately excited; that is, connecting the field terminals to a few dry cells, and seeing if the dynamo will give off current from the brushes in this condition. If it does not, reverse the direction of the dynamo. If this fails, reverse the field connections to the battery so that the current will flow through the field in the opposite direction. If all of these fail to make the generator work, then, we believe, the case is hopeless.]

## Canoe Driven by Air Propeller.

The picture shown below is of an 18-foot canoe, owned by Mr. Joseph Bister, of Mamaroneck, N. Y. This small craft has a tubular steam framework mounted on it, supporting a 5-foot 8-inch air propeller.

The propeller is driven by a 7 h.p. motorcycle engine, connected by a two-inch belt and a loose pulley. The pontoons enable one to move



Air Canoe, owned by Mr. Joseph Bister.

about the canoe freely when cranking the motor, but these clear the surface of the water when the boat is up to speed. A speed of ten to fifteen miles an hour is claimed with a 7-h.p. engine turning the propeller at about 800 revolutions per minute.

## Speed with an Automobile Motor.

To the Editor MoToR BoatinG, Sir:

Being a constant reader of your paper I take the liberty of asking you for advice. I have a four-cylinder four-cycle automobile motor, 4 1/2 inches x 5 inches, installed in a raised deck cruiser 30 feet long,

8 1/2-foot beam, 32-inch draft and of good lines. Kindly inform me what size and pitch propeller I should use with this engine so that the same would develop about 15 1/2 to 16 1/2 h.p. at 550 to 600 revolutions under load. Also kindly inform me what speed I might expect.

L. H., Hoboken, N. J.

[We believe that a four-cylinder, four-cycle automobile motor having a bore of 4 1/2" and a stroke of 5" installed in a 30' x 8' raised-deck cruiser should give us in the neighborhood of 9 1/2 miles per hour, if the boat is not too heavy, and is of good lines, as you say she is. A proper wheel for this outfit at 600 r.p.m. would be one of three blades 24 inches in diameter and 24 inches pitch.]

## Cause of Knocking.

To the Editor MoToR BoatinG, Sir:

As a constant reader of MoToR BoatinG, may I ask you the following questions: Will you kindly give me the formula for figuring the pitch of propellers, and also how, if possible, to filter gasoline, at least to separate the water, and will you also tell me what causes knocking in my engine while running, as this does not occur constantly, but however small, is very annoying.

F. G. J., Brooklyn, N. Y.

[We would advise you to refer to page 36 of the June, 1911, issue of MoToR BoatinG for a method of determining the pitch of your propeller.]

Water may be separated from gasoline by straining through chamois, as gasoline will pass through this material and water will not.

Intermittent knocking in your engine may result from several causes, some of which are as follows: A fly-wheel which is slightly loose on the shaft; not enough gasoline being supplied to the carburetor, or, in other words, the needle valve not open far enough, or it may result from the spark being too far advanced. The presence of carbon within the cylinder will also cause slight knocking.

The remedy for all these faults is so obvious, we believe, as not to require any further explanation.

## What Type of Hull?

To the Editor MoToR BoatinG, Sir:

I have lately purchased a 2-cycle, 18 h.p. automobile engine and want to install same in a motor boat and get the best results from same. Will you please answer the following questions: Speed of engine 250 to 2,000 revolutions—boat to be 16 feet to 18 feet long? What beam should boat be? Model? Propeller? Speed per hour? Where can I procure plans for boat that you recommend?

F. E. H., Willimantic, Conn.

[This is rather hard to do with the meager information that you have given us. We do not know whether you desire a cruiser, a runabout, or a hydroplane, and, of course, the most suitable dimensions depend upon the particular type of boat chosen.]

If it is for runabout service, one of about 18 by 4 1/2 ft. should prove very satisfactory. Whether it is to be of the round, flat or V-bottom type again depends upon what service you wish to put the boat to. However, we would not recommend the flat bottom unless the boat is to be used in extremely shoal water, or used to carry large parties and land them on a beach. V-bottoms are very popular nowadays, and are giving excellent satisfaction. They are easy to build and to maintain.

For a proper propeller for a V-bottom, 18 by 4 1/2 feet hull, with an 18 h.p. motor, which develops its power at 900 r.p.m., we would recommend a three-blade one, 16 inches in diameter by 22 inches pitch, which should give you a speed of 14 or 15 miles an hour, if the boat is of good design.

Plans for a boat of the above particulars can be had from any of the naval architects.]

## The Automobile Motor.

To the Editor MoToR Boating, Sir:

As a subscriber to MoToR Boating, I would like a little information about boats and power for same. I am building a twenty-foot monoplane, by Harry Douglas Bacon, in January, 1912, issue of MoToR Boating. I have a four-cylinder, four-cycle,  $4\frac{1}{2} \times 5$  automobile motor out of a 1912 special auto, and the engine is rated at 16 h.p., but I do not know what speed it is rated from. The engine is of heavy construction. Would it be practical to install the engine in this boat and what kind of a wheel would you suggest for this outfit? Sixteen inches is the limit wheel space. What speed can I expect?

G. T. D., Trenton, Mo.

[With a four-cylinder, four-cycle automobile motor, we would advise a propeller having two blades, 16 inches in diameter by 30-inch pitch, which, if turned at from 900 to 1,000 r.p.m., should give you a speed of approximately 23 miles per hour (judging from what the author says in his article), if the motor is in good condition and delivers an amount of power which the average motor of these dimensions should.

Some of the points which should be considered when installing an automobile motor in a boat are taken up on page 43 of the July issue of MoToR Boating, and were also considered in the prize contest department in the April, 1913, issue.]

## Seating Arrangement.

To the Editor MoToR Boating, Sir:

As I am a subscriber of MoToR Boating I wish to impose upon you a few questions. I am thinking of having built, next year, a 16-foot hull of the V transom type. The hull that I have in mind is a fairly beamy one with considerable freeboard: a boat of the ideal family type—not a speed boat, but not so very slow. The company producing these boats regularly builds them with paneled lockers under the seats, and the cockpit ceiled up with cypress. As this makes the boat rather heavy, I intend to have the seats made without lockers and supported on turned stanchions. Would it be advisable to leave out the ceiling? If used merely to cover the ribs and make the boat look better I should like to dispense with it; if it materially strengthens the hull, I would rather have the interior ceiled up.

Another feature about which I am in doubt is the seating arrangement. As the sections are rather sharp forward, it is best to put the motor aft of midships. I am undecided whether I want side or cross seats. If the latter, I would have one in the stern aft the motor, and another about midships. This would leave room in the bow for a couple of camp stools or a chair. I do not wish to carry, as a rule, more than six persons. Would cross seats or side seats be, in your opinion, best suited for a boat of this type and with motor placed well toward the stern? The motor I am considering is a 3 h.p. 2-cycle type, weighing about 125 pounds. Would 8 or 9 miles be too much to expect from a boat of this type with the above motor?

W. K. B., Ann Harbor, Mich.

[It will be perfectly feasible to omit the ceiling in order to lighten the boat, as this part of the construction has little to do with the strength of the boat.

For a boat as small as yours, we believe the best seating arrangement is had, by all means, with the side seats rather than cross seats. In boats above 20 feet in length, however, cross seats seem to be the more popular arrangement.

We should think that a 3 h.p. motor should drive your boat approximately 8 miles an hour with two or three people aboard.]

## Speed Motor in an 18-Foot Boat.

To the Editor MoToR Boating, Sir:

As a subscriber of MoToR Boating, I would greatly appreciate an answer to the following question: I would like to know if I could install my 19-23 h.p., 3-cylinder, speed motor in my 18-foot boat and what speed could be expected. And if it is not advisable to install this motor in this boat, what type boat would you advise me to get for it, as I am in for all the speed I can get.

A. D. Taunton, Mass.

[Offhand, we are inclined to doubt the feasibility of installing a 23 h.p. motor in an 18-foot boat, but as we are not personally acquainted with either this particular motor, or the boat in question, we do not like to advise one way or the other.

As far as average practice is concerned for this power motor, we would not think of installing it for runabout service in anything short of 20 feet, which, if the boat is of average design and weight, should give you a speed of about 15 miles an hour.

Of course, you realize that you have not told us to what purpose you wish to put the boat, or anything of her design. If she happens to be one of the stock hydroplanes, of course, then, you will get fairly good results with your outfit. Also, if you desire nothing but speed, then a boat could be designed as small as 18 feet, or even smaller, which would give you satisfactory results with 23 h.p.]

## Route to Florida.

To the Editor MoToR Boating, Sir:

I am anxious to get in touch with as many as possible of the yachtsmen and motor boatmen who are contemplating a cruise through the inland waterways of this section during the coming winter, and it has occurred to me that perhaps you will be able to assist me in this direction. I will greatly appreciate any names and addresses of such persons which you may be able to give me, or any suggestions as to how I can best obtain this information from some other source. I think that in nine cases out of ten this office can be of considerable assistance to such persons, and am counting on receiving some interesting reports of their experiences while navigating these waters, in return.

W. C. STILES, Lieutenant, U. S. Navy,  
Norfolk, Va.

## Salt Water Fittings.

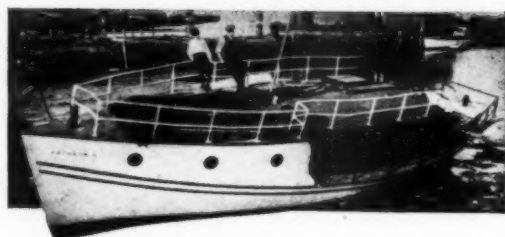
To the Editor MoToR Boating, Sir:

Please tell me if brass piping and elbows are better than galvanized iron for exhaust pipe in open boat used on salt water, power—gasoline motor?

I have been using, this summer, galvanized iron elbows and piping. It rusted so tight that I found it impossible to disconnect it. Is there anything that could be applied to the screw joints to prevent this?

H. S., Munroe, N. C.

[Brass fittings are decidedly more desirable than iron ones for the exhaust line in any boat. However, even with the former there is still some tendency for the fittings to become tight, especially where salt water is used for cooling the exhaust line. Graphite applied liberally to the threads before the joint is made up helps considerably, and should be used on the threads of all bolts, nuts, etc., around the engine, which will permit easy withdrawing of them whenever necessary.]



Cruiser, designed and built by Mr. Keefe.

## Kathryn K.

To the Editor MoToR Boating, Sir:

This type of cruiser was designed and built by its owner, Joseph W. Keefe, of Jersey City, N. J., with the intention of using it as a passenger boat. She measures 43 feet with 12-foot beam, 7-foot standing room in cabins, and draws  $3\frac{1}{2}$  feet of water.

The keel is of oak and the planking of the "wood eternal"—cypress, all copper fastened.

The hunting cabin, which is used as a galley, contains an especially large refrigerator and dish closets on the port side. Lockers, galley, pump, sink and toilet are on the starboard side.

A 75-gallon partitioned heavy copper tank is set on an oak bed in the bow, under which bed a place is reserved for anchors, lights and rigging. Eight hundred feet of rope are carried here and three galvanized folding anchors weighing 45 pounds each.

There are three port holes on each side of the hunting cabin, measuring 8 inches in diameter.

The main cabin is amidships and has four windows on each side, measuring 28 x 24 inches each. These windows are equipped with variable fasteners and when entirely open drop out of sight. The window frames are made of chestnut wood. The inside of this cabin is fitted with wide seats, underneath which are lockers. On each side of cabin, at entrance to galley, is a clothes closet.

The aft cabin is almost as large as the main cabin and has the same number and size of windows and seats. In this cabin is located the power plant, an 18-25 h.p. Standard motor, which drives the boat at 9 miles per hour.

The cockpit, which is extremely aft, measures 9 feet long and 8 feet wide, and has stationary seats on each side and in back. In the floor of the cockpit is a trap door, the space under which is available for storing supplies, etc. There is a 12 x 12-inch window from cockpit to engine-room cabin.

The stern is of the fan-tail pattern and is so constructed with a view to speed.

Four hundred and fifty feet of 1-inch iron railing, 2-foot high, are around the roof and lower deck and cockpit.

The cruiser has passed muster at the hands of Uncle Sam's War Department, and her gross tonnage registered as 13.

## Slow Speed with Fast Hull.

To the Editor MoToR Boating, Sir:

I will be greatly obliged to you if you will help me out of my trouble. I have a V-bottom boat, length, 21 feet 6 inches on water line, 22 feet overall; beam, 52 inches; planking,  $\frac{1}{2}$  inch; weight of complete outfit, about 1,300 pounds. The engine is a four-cycle, four-cylinder,  $3\frac{3}{4}$  bore,  $4\frac{1}{2}$  stroke, rated to turn at 1,200 revolutions. I now have a 16 x 20 propeller on this engine and it only turns 875 revolutions. It has a clear exhaust and when tuned up to highest revolutions the best speed I can get is 10 miles an hour. Will you kindly advise me what size wheel I should use, and what speed could I expect with new propeller, and also the h.p. this engine would be rated at? Would be pleased to receive information as soon as possible, as I would like to make some change to get better results before the season is over.

F. L., Philadelphia, Pa.

[We agree with you that something must be wrong with your outfit when you can only obtain 10 miles per hour from it. We would recommend a 2-bladed propeller 17" in diameter by 27" pitch, which, if turned from 900 to 1,000 r.p.m., should give you a speed of 18 miles per hour without any difficulty.

While it is impossible to determine the power of a motor from simply its physical dimensions, yet if yours is of average design and in good condition, we should expect you would be able to obtain about 22 h.p. from your motor.]

## Sticking of Vibrator Points.

I hope that you will enlighten me in my trouble, as you have countless others in theirs. I have a single-cylinder coil and the vibrator points stick together, sometimes causing engine to stop and then all that is necessary is to tickle the vibrator and it goes as well as ever for about a mile, and then without missing at all it just stops dead until it is tickled again, and then it will run for perhaps another mile, sometimes more or less. Kindly give me your opinion on same.

G. A. Guttenberg, N. J.

[This is a very common occurrence, especially where the battery current is excessive, or the adjustment of the vibrator points not correct. This sticking results from a certain pitting effect which always results at such a point. The vibrator spring connected to the positive terminal of the battery on a dynamo has a tendency to take the form of a point, while that spring connected to the negative of the battery results in a pit or crater, as it is sometimes called.

One method to correct such a fault is to reverse the direction of the current, flowing through the primary of the coil at frequent intervals, provided, of course, that your battery current is not of too great an intensity, and that the vibrator springs are adjusted so as to produce a minimum spark at the vibrator points. A good wiring scheme to correct this is shown on page 33 of the September issue of MoToR Boating, which reverses the direction of the current by means of Switch A.]

## Crankcase Explosions.

To the Editor MoToR Boating, Sir:

Have a 9-12 h.p. engine, 2-cycle, 3-port, 650 r.p.m. Carburetor, silencer, 16-inch x 24-inch pitch propeller, jump spark ignition. Engine in good condition, compression good and runs like a clock. About every quarter of an hour there is a crankcase explosion, sometimes two or three in succession, then none for half an hour. We are not experts, but know our engine pretty well; in fact, can say we are on intimate terms. Would appreciate your kind advice on the subject of crank case explosions.

O. W. J., New York City.

[It is rather hard to say, offhand, just what the trouble is, inasmuch as you say you are "on intimate terms" with your motor.

Our first thoughts would be that there is an insufficient supply of gasoline, or too great a supply of air. The former can be remedied, of course, by opening the needle valve on the carburetor a little more, and the latter by increasing the tension on the air valve.

It may also be that you are troubled from carbon deposits in the cylinder, and get a rather late ignition in some cases from incandescent particles of carbon. This can be rectified by thoroughly cleaning out the cylinder with either kerosene or denatured alcohol.

Another method of cleaning out carbon deposits which has proven very effective is to run your engine neutral, and feed spoonfuls of soapy water into the carburetor through the air inlet. The motor will naturally make considerable fuss during this cleansing process, but the results are very good indeed after this treatment. A spark too far retarded may also cause base explosions.]



# Boats of Stock Design

## Ugly Duckling.

The 18-foot Ugly Duckling shown on this page was built for Dr. Harold W. Dana by the Bath Marine Construction Co., Bath, Me., the construction being a combination of the thwart-ship and longitudinal framing originated by

together with pneumatic hammers. This 18-ft. "Flyer" with a 5-6 h.p. engine tests out for 5 m.p.h., will seat comfortably ten persons, and is designed to operate on either gasoline or kerosene. The cost of this pleasing little boat is put at \$200 crated and placed free on board the cars at Detroit.



their president, Mr. Henry D. Bacon. The engine is placed forward under a watertight hinged cover, and separated from the after part of the boat by a partial bulkhead. The reverse gear is placed near the wheel, and, with the automobile throttle and spark control provided, the boat is easily handled. Aft of the helmsman's compartment, seating two, is the cockpit which has a removable seat aft. A great many boats of this model have been built, both from the knock-down, and from plans and full-size patterns supplied by the company, and with such improvements as flaring the bow and rounding the stern, the model is considered one of the best all-around small V-boats. Its Roberts 2-cycle engine is equipped with a convenient rear starter and Bosch magneto.

Ugly Duckling's 2-cycle 4 x 3½ in. Roberts motor gives her a speed of 12 miles per hour.

## An Unusual Runabout.

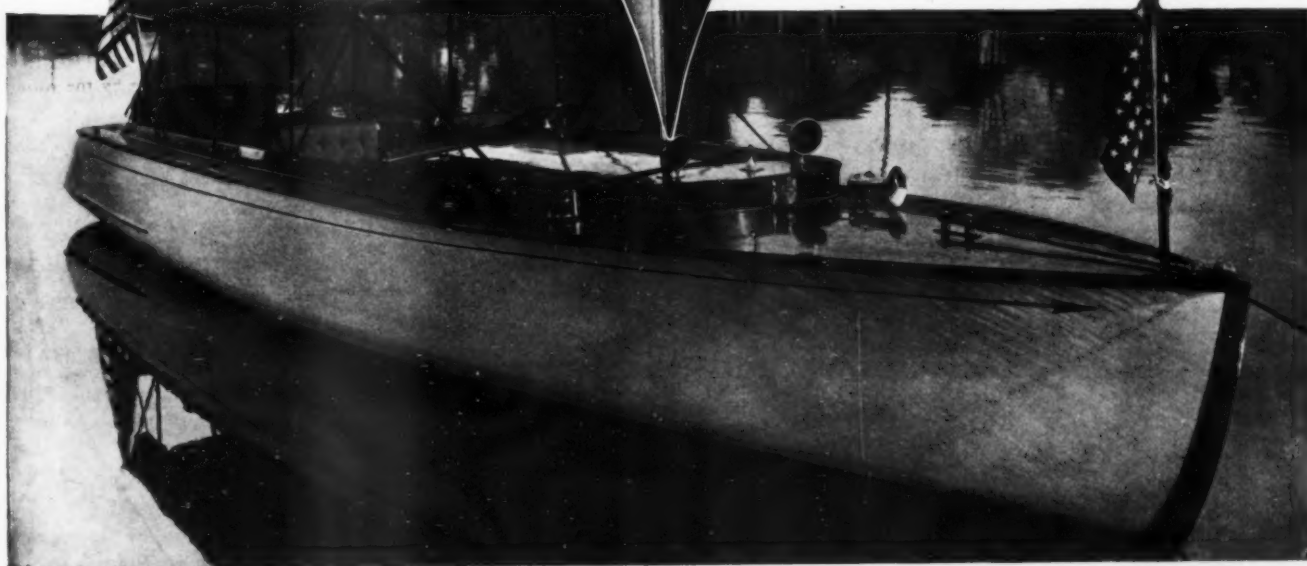
An attractive and somewhat unusual runabout has recently been constructed by the Niagara Motor Boat Co., North Tonawanda, N. Y., for Mr. M. F. Murphy, of Schenectady. The boat is 32 feet in length with a beam of 6 feet 6 inches, and the construction is exceptionally substantial throughout, owing to the expressed desire of the owner for a boat in which seaworthiness, comfort, lack of vibration, and absolute quietness of operation should be attained. After a season's use the owner is satisfied that these requirements have been met. The cockpit is 14 feet in length, and, aside from a divided seat aft of the engine compartment, arranged for ease in reaching the operator's seat, is left clear for the use of wicker chairs. The steering wheel carries the spark and throttle controls, and, as the reverse gear is handled by two foot pedals, the operator is not obliged to remove his hands from the wheel in maneuvering. A 6-cylinder, 4-cycle, 45-h.p. Fay & Bowen motor, equipped with an electric self-starter, is installed forward under watertight hatch covers.

## A Steel 18-Footer.

A very pleasing stock boat is the 18' x 4' 6" steel open boat manufactured by the Michigan Steel Boat Co., Detroit, Mich. The engine is placed forward and separated from the cockpit by a solid oak panel on which the wheel is fitted, making ease of control a feature. The floor of the cockpit, which is of steel in narrow strips, is raised and covered with linoleum. The decks and coaming are of solid oak finished to a mirror's surface, while the hull is made of heavily galvanized steel, cut in regular pattern strips, lock seamed and welded.

An attractive boat which seats

ten comfortably.



Alco II is equipped with a 45 h.p. six-cylinder Fay and Bowen from which a speed of 19 miles per hour is obtained, which is somewhat unusual for a boat of this size and great weight.

# New Things for Motor Boatmen

## The "Slixo" Muffler.

The Moto Marine Works, of 30-50 Church St., New York City, has introduced a spherical type of muffler which is intended to give an effective "spinning" motion to the exhaust gases, and to, at the same time, cool them by a spray of water. The muffler is made of rust-resisting metal, and its cost is from \$3.50 up. It is claimed that not only is the muffler effective as a silencer, but its use is calculated to increase engine revolutions.

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## The Hand Klaxon.

The latest member of the Klaxon family is a development of the original Hand Klaxon which was manufactured in 1909, and since then gradually discontinued, owing to the demand for Klaxons operated by electric motor. The Hand Klaxon is operated on the Klaxon principle of a vanadium steel diaphragm vibrated by a rotor or ratchet wheel. In the case of the electric Klaxon, this ratchet wheel is rotated by means of an electrical motor; in the Hand Klaxon, by a train of gears that attain a high speed under pressure on the push-rod. It is made by the Lovell-McConnell Mfg. Co., of 190-218 Wright St., Newark, N. J., who are prepared to take orders now for delivery on December 1st, and costs \$10.

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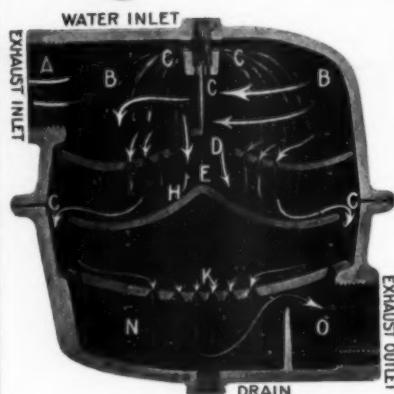
## A Combination Spark Plug.

A new Western Electric-Pittsfield spark plug, which is claimed to contain all the advantages of the mica plug with the high insulating qualities of the porcelain plug, has recently been introduced. The feature embodied in this plug is the unusually long path along the joint between the mica and porcelain which is designed to prevent electrical leakages. The mica core fits into a well in the porcelain so deep that the path along the joint from the center electrode to the shell of the plug is of unusual length. The spark plug is manufactured by the Western Electric Co., 463 West St., New York.

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## "Presto" Star Cigar Lighter.

The "Presto" Star cigar lighter, which is designed in the shape of a watch, is constructed exactly like the "Presto" Ford cigar lighter, except that it is furnished with a 6-volt cigar lighter tip, designed for use on the ordinary



The "Slixo" muffler.



The Hand Klaxon.



A combination spark plug.

"Presto" Star cigar lighter.



Fay valve lifter.

storage battery. It is equipped with 10 feet of silk cord, which can easily be attached by leading the wires through the bulkhead, connecting one terminal to the binding post on top of the magneto, and the other any convenient portion of the engine. The lighter, complete with holder and platinum tip, costs \$2.50. An additional charge of 25c is added for 8-volt platinum tip, and 50c for 12-volt tip. The cigar lighter is made by the Metal Specialties Mfg. Co., 736-738 W. Monroe St., Chicago, Ill.

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## A New Valve Lifter.

W. B. Fay, of Chicopee Falls, Mass., is the manufacturer of a valve lifter, which is hand-forged from bar steel, and which is fitted with a ratchet arrangement which holds the jaws in the desired position. It is designed to operate on all types of valve, and its cost is \$1.50.

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## The Atkins Kerosene Carbureter.

In the Atkins kerosene carbureter, which is designed to use low-grade fuel, the air is heated in the usual manner by a sleeve around the exhaust pipe, and the kerosene is also heated before entering the carbureter in any suitable way, such as coiling the feed pipe several times around the exhaust pipe. These carbureters are manufactured by the Atkins Carbureter Co., 3629 Indiana Ave., Chicago, Ill.

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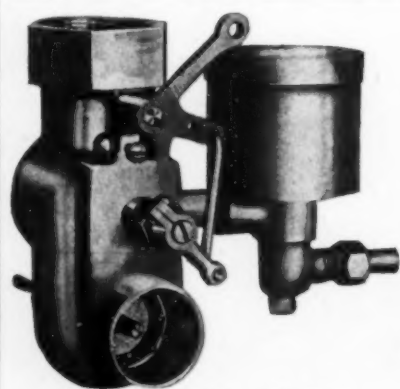
## "B"-Line Grease Guns.

The Randall-Faichney Co., of Boston, Mass., has added the "Boston Combination" to their already long line of grease guns. This is used in the ordinary way for oils and light greases, and when needed for heavier grease the lock-nut "A" is simply screwed down to position "B." The gun is finished in polished and lacquered brass, and costs, including oil and grease tips and closing plug, from \$2.25 to \$5, according to size.

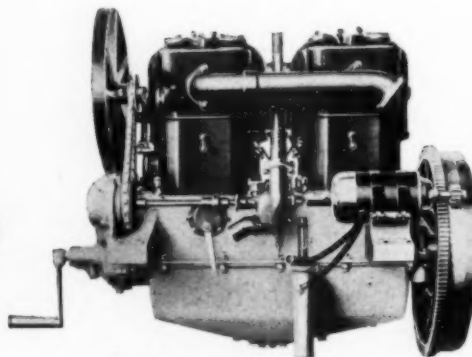
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## New Rushmore Starter.

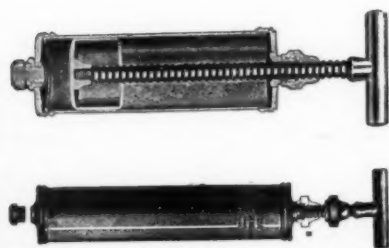
Our illustration shows a 1914 model, 38 h.p. Simplex engine, on which the new Rushmore Model C starter is fitted as standard equipment. The starter is designed to spin the engine against full compression with wide-open throttle at 100 r.p.m. It is made by the Rushmore Dynamo Works, Plainfield, N. J., and may be fitted in a similar manner to a marine engine.



Atkins kerosene carbureter.



Rushmore Model C starter.



"B"-Line grease guns, showing method of construction.





Arbeco electric lamps.

### Arbeco Electric Lamps.

The Reynolds-Browne Company, of 1312 Michigan Avenue, Chicago, have recently introduced their Model B Arbeco lamp which is made in all sizes for head or sidelights. This lamp is fitted with silvered glass mirror reflector and glass body, and is finished in either brass, nickel or copper, or in color to match the deck fittings. The colors are applied inside, and it is claimed that the special process used reduces the labor of cleaning to a minimum. These lamps are very light, and are said to keep quite cool under all circumstances.

### The Stromberg Gasoline Strainer.

The Stromberg Gasoline Strainer is designed to insure every particle of foreign substance, including water, being removed from the gasoline before it enters the carburetor. All gasoline flowing through the line enters the strainer and can flow in only one direction, through the vertical center tube to the bottom of the bowl. It then arises, leaving all heavy particles deposited in the sediment chamber, and seeps through a fine metal gauze which retains the foreign matter. The gasoline then flows through the outlet to the carburetor. The cost of the strainer, complete with arm, shut-off cock and gasoline connections, is \$2.50. It is made by the Stromberg Motor Devices Company, 64-66-68 East Twenty-fifth Street, Chicago, Ill.

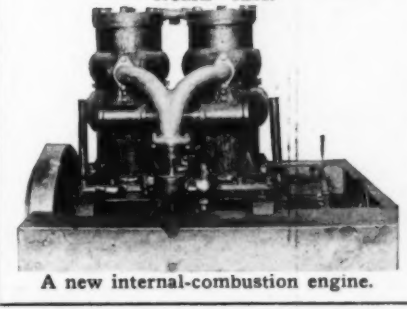
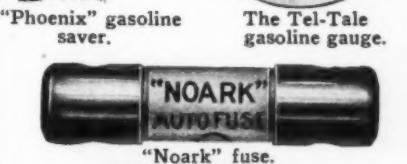
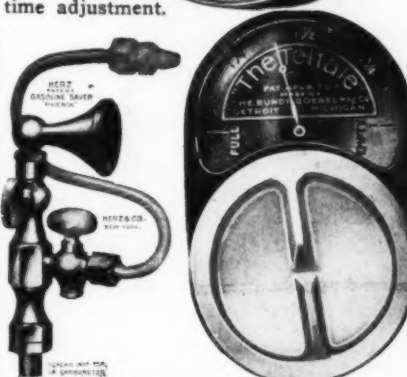
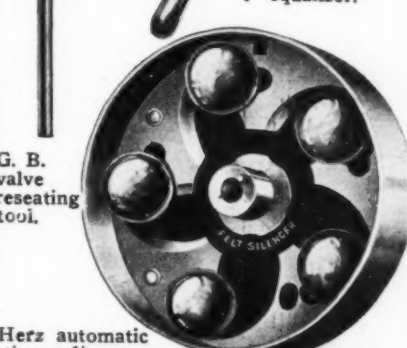
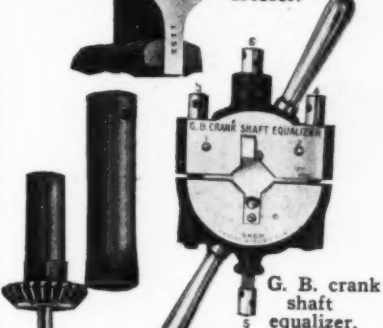
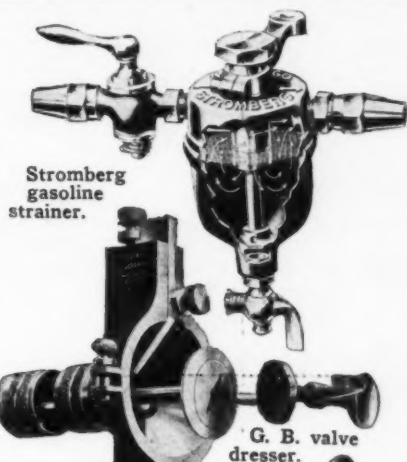
### The G. B. Valve Tool and G. B. Crankshaft Equalizer.

The G. B. valve tool consists of a valve dresser, which is designed to deal with any size or material at a correct angle of 45 degrees, and a reseating tool which corrects and faces the valve seat to meet the valve. The tool is also intended to remove carbon and any imperfections, ridges or grooves, and to complete its work in a relatively short time. It is made of drop-forged, case-hardened steel with blade and seat-cutter of high-speed, oil-tempered tool steel. The price of the tool complete is \$25.

The G. B. crankshaft equalizer is of high-grade construction throughout. The cutting blade is made of the finest quality of high-speed, oil-tempered tool steel, and is said to true up over 25 crankshafts with one sharpening. It may be easily sharpened by the user. The makers are the G. B. Sales Corporation, 1790 Broadway, New York City.

### Stewart Revolution Indicator.

The Stewart revolution indicator embodies the same identical principle and constructive design as in the highest-priced instrument. It may be mounted directly in front of the steersman, where it can be read without difficulty, or it can be mounted anywhere else on the boat desired. The dial reads from 200 up to 1,800 r.p.m. The complete equipment consists of a split pulley, for attaching to the propeller shaft; and a combination pulley and swivel-joint, connected with the propeller shaft pulley by a coiled wire belt made of piano wire. The transmission from the swivel-joint to the speedometer is by flexible shaft. This shaft may be of any length necessary for any particular installation. The indicator is made



Stewart revolution indicator.

upon the magnetic type principle with only one moving part, which is a circular magnet, mounted on the top of the shaft. The price of the indicator, complete, including pulleys, shaft (up to 5 feet) and belt, is \$15. It is made by the Stewart-Warner Speedometer Corp., 1826-1852 Diversey Boulevard, Chicago, Ill.

### Herz Automatic Time Adjustment.

Herz & Co., of 256 Lafayette St., New York, have recently modified the design of their well known automatic magneto timing device by the use of five steel balls and the corresponding re-designing of the curved grooves in which they operate by centrifugal force. The effect of this alteration in design has been, it is claimed, to eliminate all noise, and to further insure smoothness of operation. This result has been further aided by the use of an improved central locknut and washers. The range of time adjustment is wide and the timer is automatic in action, the forcing of the balls from the center by centrifugal force imparting a twist to the magneto armature in relation to the driving shaft. The cost of the time adjuster is \$20.

Herz & Co. also make the Phoenix gasoline saver, a device which, when fitted to the carburetor, is stated to save a considerable amount of fuel and to increase the power of the engine, besides insuring easy starting and regular engine running. The cost of the Phoenix is \$4.

### The Tel-Tale Gasoline Gauge.

The Bundy-Goebel Mfg. Co., of 186 Westminster Ave., Detroit, Mich., have introduced the Tel-Tale gasoline gauge, which is intended to be fitted to the filler hole of the tank and to indicate the available quantity of gasoline at any time. The gauge is made to fit any pattern tank. It costs \$2.

### The "Noark" Fuse.

The H. W. Johns-Manville Company, of New York, have placed the "Noark" fuse on the market. This device is designed to act as an indicator for the protection of lighting circuits. It is made in two sizes, one of which is intended to carry a rated capacity indefinitely and to blow on an overload of 25%, and the other to carry an overload of 33 1/3% and to blow on one of 66 2/3%. The calculations are based on a temperature of 140 degrees. The respective sizes of the fuses are 1/4 x 1 1/4 and 3/8 x 1 inches. The indicators are very plainly marked, a black spot appearing in the center of the white label when the fuse blows.

### A New Internal-Combustion Engine.

The invention of Felix Joswich, of St. Paul, Minn., relates to improvements in internal combustion engines of the two-cycle type, one of its main objects being to create and employ a partial vacuum to scavenge the combustion chamber of burned-out gases, and, at the same time, to draw into it a fresh charge of explosive mixture. The use of a vacuum for these purposes is said to economize power and assist in vaporizing the explosive mixture, rendering it unnecessary to use a pump for forcing the explosive mixture into the combustion chamber under pressure.



**Baby Doris**, a 16-mile runabout owned by Mr. R. J. Tooke, Montreal. Powered with a Sterling Kid and built by the Gilbert Motor Boat Co.

#### Good Record for Sterling.

Marco III, a 28-ft. displacement hull of the new wave-collecting type designed by George F. Crouch, of New York, powered with a 1910, Model B Sterling, six-cylinder, 45-75-h.p., owned by John G. Robinson, of the Marine Construction Company, Ltd., of Toronto, succeeded in cleaning up the big races at both Hamilton and Toronto, and holds a record of entering eleven races, obtaining seven first prizes, two seconds and two thirds. This is an especially wonderful record, in view of the fact that her power plant is in its fourth season, and was formerly in Shamrock, a 37-ft. mahogany hull that was the Toronto Bay champion in 1910. The champion was burned just a year ago, and the engine was sold by the insurance company. The base, exhaust manifold and cylinders were all cracked by the terrific heat that totally destroyed the boat, but the base was welded and the motor rebuilt in the shops of the Marine Construction Company and placed in the new cedar-planked hull a few days before the Hamilton races, which were held the week of August 11th. At top speed, this motor drives an 18 by 34-inch Columbian, architect's propeller at 1,100 revolutions, which is somewhat remarkable for so old an engine.

#### U-S-L President Goes Abroad.

Pressure of business requiring his immediate attention in England and the Continent caused Mr. J. Allen Smith, president of the United States Light and Heating Company, manufacturers of the U-S-L Electric Starter and Lighter, Storage Batteries and Electric Car Lighting Equipments, to start on his second

trans-Atlantic trip of the year on the 11th of last month. Mr. Smith will not only attend to unfinished and new business, but will endeavor to visit the various automobile shows, which are held earlier in England and Europe than in this country.

As a result of Mr. Smith's first trip, the officials of the more prominent automobile and railroad companies abroad are now familiar with U-S-L products, and the U-S-L trademark is already associated with English and European manufacturers. Mr. Smith has announced no definite date for his return to America.

#### Stromberg Moves Its Eastern Branch.

The Stromberg Motor Devices Company, makers of Stromberg carburetors, announces the removal of its Eastern branch to 146 W. 56th St., between 6th and 7th Avenues. The branch occupies a three-story building, the ground floor of which is devoted to service and installation work. The second story is given over to an extensive stock room and sales room, while the third floor is taken up with offices. This branch, of

which Roger B. Whitman is the manager, is the center of Stromberg activities for all of the Atlantic Coast States.

#### Roosevelt Selects Hampton Kerosene Carburetor.

Mr. Harold Browne, who had charge of the installation of power for the Roosevelt Brazilian Exploration Expedition, after a careful investigation of all other methods of utilizing kerosene in the ordinary internal combustion engine, without any alteration, has selected the Hampton Kerosene Carburetor, and the boats for that expedition have been so equipped.

#### Lamb Engines in Carload Lots.

The Lamb Engine Company are now shipping their 1914 models from their factory at Clinton, Iowa, to New York in carload quantities. The Lamb Engine business has grown so rapidly within the last couple of years that the Lamb Engine Company have arranged to increase their warehouse room in Jersey City, and have now double the space they previously



One of five 18-footers owned by the Naval Association of Lisbon, whose Caille Perfection engines give them a speed of 7 knots an hour.



A 16-foot Valley hydroplane powered with a Roberts 50 h.p. 195-lb motor which drove her through the water on her trial trip at 31 miles per hour.



"Ileen," a passenger and tow boat in service in Auckland Harbor, New Zealand. She was built by Bailey & Lowe of Auckland and is powered with a 4-cylinder Sterling engine.

occupied. The carload of motors now in transit has all been taken up by the agents along the coast, and the second carload, which will be shipped shortly, will be used by the Albert E. Eldredge Corporation, the local New York agents for Lamb engines. A part of this last shipment will be used to fill local orders, and the balance will be on exhibition in this company's rooms on the Concourse, Nos. 30-50 Church Street, New York City.

Mr. Albert E. Eldredge, who has been associated with the Lamb Engine Company for so many years, is still acting as their Eastern sales manager, and his work is only to look after the agents along the Atlantic Coast.

#### A 31-Mile Hydro.

Quite a number of Valley-Roberts special 16' hydroplanes, designed by the Valley Boat and Engine Company, are now in commission in the Central West, the special attraction being the extremely lightweight power plant consisting of a 50-h.p. motor, manufactured by the Roberts Motor Company, Sandusky, O., weigh-



ing but 195 lbs., and complete with reverse gear, pressed steel frame, unit construction and elevated safety rear starter exactly 375 lbs. On the trial run of one of these, a speed of 31 miles over a measured course was obtained, driving a 17 x 30 two-blade propeller 1,300 r.p.m.

#### Red Head Plugs Under One Roof.

As a step forward in both the manufacture and the speedy shipment of their products, the Emil Grossman Co., manufacturers of Red Head Spark Plugs, have consolidated their commodious Detroit and New York factories under one roof in the spacious Bush Terminal, Factory No. 20, at 41st Street and 2nd Avenue, Brooklyn, N. Y.

The new Red Head Spark Plug quarters embrace a space of 31,000 square feet, all on one floor, or two and one-half times the manufacturing and office space they formerly occupied. The increased floor space will permit the installation of a battery of specially designed machinery, nickel and brass plating and enameling equipment, which will enable them to regulate the speed and control of workmanship of every operation in the production of their goods. Shipments of goods, instead of being hauled for miles through New York's crowded streets to congested freight yards where from twelve to twenty-four hours' delay is the usual occurrence, will be loaded in cars right at their door and immediately dispatched. The Detroit factory will be continued as a Western branch, where an ample stock will be carried to take care of the Western trade. The porcelain factory at Trenton, N. J., where several kilns have recently been built, and three new buildings are being erected, will not be disturbed.

#### Canoeing, Past and Present.

L. W. Ferdinand & Co., 201 South St., Boston, Mass., in calling attention to their Jeffery's Special Marine Canoe Glue, trace the present-day popularity of canoeing back to primordial times when the savage fashioned his own birch bark canoe and made hunting and war expedi-

#### The Standard in Australia.

T. W. Simpson, Woy Woy, Sydney, N. S. W., is the owner of two 10-12-h.p. Standard motors by which he is operating a 50' x 12' ferry, Cock o' the Walk with great success at the Bar, or Ocean Beach, Woy Woy. Mr. Simpson writes that the popularity of Standard en-



Wilhelmmina, a 40 x 6 ft. displacement boat built by Nunes Bros., Sacramento, Cal. powered with a 180 h.p. Sterling engine giving her a speed of 30 m. p. h.

gines in his locality is such that he was able to dispose of his old engine, which had been in constant ferry service for five years, at only



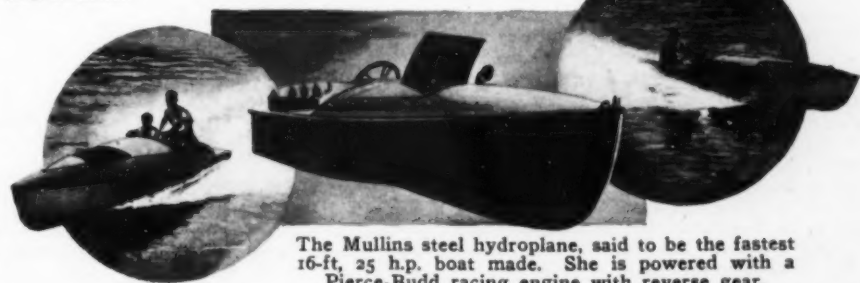
Rover, of Everett, Wash., is a twin screw boat equipped with two 30 h.p. Buffalo engines. She is 55 feet overall with 10-foot beam and a draft of 3 feet.

tions in it. In the old days, when his canoe sprang a leak, the Indian who was artisan enough to build his craft knew how to repair it with what simple aids there were at hand, but now the canoeist has neither time nor inclination for makeshift repairs, so it is pointed out that an emergency box of this glue, which is a canvas filler, should be included in the equipment.

#### New Agency for Kermath Motors.

C. H. Evans & Co., 183-187 Fremont Street, San Francisco, Cal., have taken the agency for Central California for the Kermath motors, and from now on will carry a stock of these engines in their store at that point. Mr. C. Willard Evans, secretary of the above concern, will look after the Kermath engine account for his company, and his active association with the various power boat clubs will insure good business for the Kermath Company, and will also mean that customers who buy Kermath engines will have the best of care and attention.

10 per cent. less than its original cost. In connection with this, it is interesting to note that the reported shipments out of the country of Standard engines, manufactured by the Standard Motor Construction Co., Jersey City, N. J., have increased in the last year 50 per cent. over any previous year, and that the company's export trade is now an important part of the total business.



The Mullins steel hydroplane, said to be the fastest 16-ft., 25 h.p. boat made. She is powered with a Pierce-Budd racing engine with reverse gear.

#### New Laboratory Head for Joseph Tracy.

S. M. Udale, formerly assistant research engineer with the Studebaker Corporation, is now in charge of the laboratory and motor testing plant of Joseph Tracy, whose New York office is in the United States Rubber Building, 1790 Broadway.

#### Evinrude Motor Goes to South America.

In choosing the equipment for his trip to South America, Colonel Roosevelt felt the need of some mechanical means of propulsion through unexplored rivers, and deeming it impossible to transport a motor boat through the South African wilds, he has taken along as an important part of his outfit an Evinrude outboard motor, which he will have attached to the bulky river craft available in those regions. The Evinrude which he has taken is the larger size, being 3½ h.p., and it has been especially equipped by the makers with two extra sets of waterproof batteries. It is claimed that it can be entirely submerged while in operation, and will not be affected by any amount of spray or waves. It is possible that while "Evinruding" in South American rivers, the Colonel will meet other motors of the same make, many of which have been shipped to this continent in the last five years.

#### Kermath Motor for Canadian Life Boat.

The Hinton Electric Company, of Victoria, B. C., writes, in part, to the Kermath Mfg. Co., Detroit, Mich., as follows: "It will probably be interesting to you to know that we have just received an order for a motor life boat from the Canadian Pacific Railway for their S. S. Princess McGuinna. This steamship operates in the coast trading on the west coast of Vancouver Island, which is considered one of the most treacherous bodies of water in the world. This boat is being equipped with a Kermath engine and will have as a part of its equipment a Bosch magneto and also a Perfex system of ignition." That the Kermath engine should have been selected for life boat service where absolute dependability is most essential is considered a strong recommendation for this make of motor.

#### An Address Supplied.

In our October issue on page 46 was printed a short description of School's Out, an attractive 36 x 7-ft. cruiser, designed by Elliott N. Burwell, whose address, through accident, was omitted. Mr. Burwell's address is 16 Edison Avenue, Tuft's College, Mass.

#### Awards in Prize Picture Contest.

The Racine Boat Company, Racine, Wis., informs us that in their recent prize picture contest, in which they asked for the best pictures of their boats, the following prizes were awarded: Set A, best side view—First prize to the

Gopher Outing Club, Pewaukee, Wis., Charles Tetzlaff, secretary; second prize to Commodore F. M. Flesher, Terre Haute Motor Boat Club, Terre Haute, Ind. Set B, best bow view—First prize to William Horlick, Sr., president of Horlick's Malted Milk Company, Racine, Wis.; second prize to Prof. M. J. Elrod, University of Montana, Missoula, Mont. Set C, best stern view—First prize to J. A. Flory, of Flory & Flory, Lawyers, Newark, O.; second prize to Capt. E. D. Peek, Engineers' office, United States Army, Duluth, Minn.

#### Nosredna Changes Hands.

The Anderson Engine Company, Chicago, Ill., have sold their 40 x 8-ft. mahogany day cruiser Nosredna to the State of Illinois Game and Fish Commission. It will be used on the Illinois River from La Salle to Grafton, and will be in charge of J. M. Entwistle, District Warden, whose headquarters are at Havana, Ill. The boat was built this year by the Weckler Boat Co., and is powered with a six-cylinder 5 x 6-inch, medium-speed Anderson engine.

#### Florida Hydroplane.

James E. Dingee, a motor boat builder of Mt. Dora, Fla., tells us that he has just completed a 20-foot stepless hydroplane with V sections forward and spray boards along the sheer line. The hull is powered with a 20 h.p. Emerson motor, driving a Bryant & Berry three-bladed 14½ by 28-inch propeller, 1,000 revolutions per minute. Mr. Dingee anticipates a speed of 20 miles per hour from the boat.

### The B. I. T. Racers.

(Continued from the October issue.)

THE description of Maple Leaf was included in our last number. The other boats were the following:

Crusader—Owner, Mr. H. Hollingsworth. She is Thornycroft type hydroplane, 33 ft. long by 7-ft. beam, and was built this season by J. W. Brooke & Co., of Lowestoft, under license from the designers. Her engine is an eight-cylinder Brooke of 300 b.h.p. It is of the V-type with copper-jacketed cylinders, and is equipped with special light steel pistons. The inlet valves are actuated by push rods and rockers, while the exhaust valves are operated by plungers and tappets in the usual manner. The speed is about 1,300 r.p.m., and the drive is directly through a clutch on the propeller shaft. In the elimination trials her speed in rough water was just under 34-knots average, but she was not forced. Her owner built two boats this year for the contest, and put forward Crusader himself as the better boat.

Izme—Owrier, Mr. Albert Vickers. In this boat we have another of Sam Saunders' masterpieces, as may be expected, seeing that the proprietors of his yard are the Wolseley Motor Car Company, who, in turn, are owned by Vickers, Ltd. (late Vickers' Sons, and Maxim), and Mr. Albert Vickers is the head of this great concern. She is a most interesting boat of the Fauber hydroplane type 32 feet in length, greatly resembling Maple Leaf IV, and is driven by two V-type Wolseley aero motors weighing less than 5 lbs. per horsepower, and driving but a single screw through gearing. Each develops about 165 b.h.p. at 1,000 r.p.m., and so there is over 300 horsepower at the command of her helmsman.

In the elimination trials she attained an average speed of 36.5 knots. Although driving one shaft, the engines are staggered, the after one to port and the forward motor to starboard, with a gear-box arranged between them. Each motor is equipped with friction and dog clutches, and there is a reverse gear to the tail shaft.

#### FRANCE.

Despujols I—Owner, M. Coulomb. The design of this quaint craft and her sister entirely differs from either of the English or American

nying that she is exceedingly fast, and her running came quite as a surprise, and her designer declares she attained a mile-a-minute clip when on trials on the Seine. The engine is a six-cylinder Despujols, who also built the hull. The bore is 127 mm. (5 in.) by 254 m.m. (10 in.) stroke, and at 2,000 rvs. per minute develops 400 h.p., but it is only being run at about 1,700.

Despujols II—Owner, M. Maurice Coulomb. She is similar to Despujols I, and has an engine of the same make and power installed, but her sides curve in fairly sharply just about

amidships, so that her forward sections are much beamier than those aft of amidships. Her length is also 26 ft. and not 29½ ft. as officially given. It is interesting to know that the planking underneath the stern of both boats, where they sit at high speed is two inches thick, having to take a pressure estimated by the builders at 900 lbs. per square inch. At speed three-quarters of their length lifts clear of the water, and they dip, or flap, at every ripple, very similar to the Ricochet and earlier Thornycroft hydroplanes.

#### AMERICA.

Ankle Deep—Owner, Count Casimir Mankowski. This is a hydroplane of the improved Dixie, Jr. type and was built last season by the Staten

Island Shipbuilding Company, from designs by Mr. Clinton Crane, designer of the famous old Dixies. She is a very fine boat of the single-step class and caused considerable favorable comment in England. Her length is 32 ft., and she is equipped with two 150-h.p., 5½-in. by 6¼-in., 8-cylinder, Sterling motors, turning at 1,250 r.p.m., and driving twin-screws at about 1,500 r.p.m. through gearing at the forward end, the engine being installed well aft. Her bows are fitted with a knife-edge brass stem-piece.

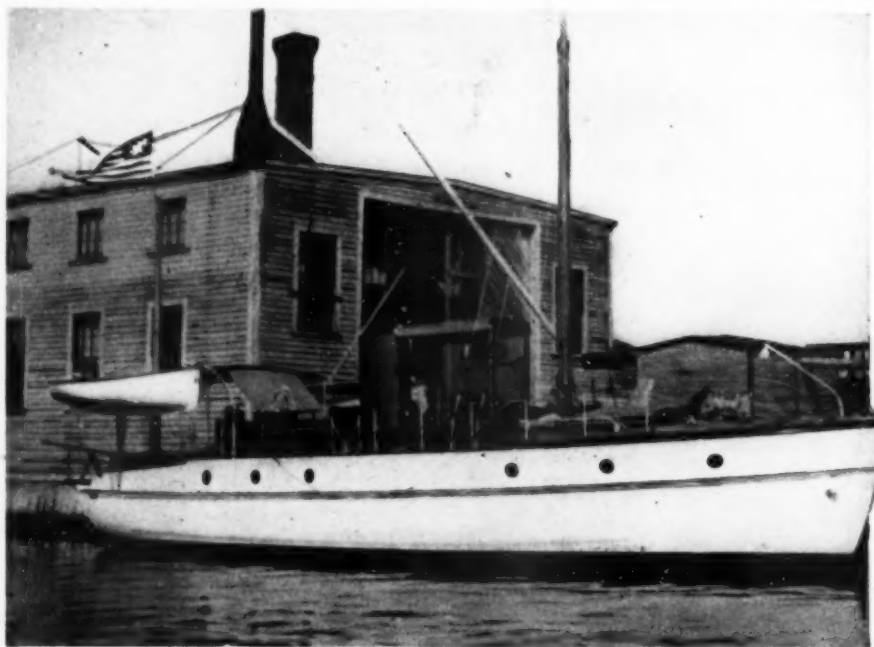
Disturber III—Owner, Mr. J. A. Pugh. She and Maple Leaf IV were the only boats in the races that were built to the length limits allowed by the rules, being just under 40 feet long. She also was built last year, and is a handsome boat, with considerable flare to her forward sections. Her engines are two 12-cylinder Van Blercks, each of 300 h.p., but in the races she could hardly have been developing more than 500 h.p.

### Architect's Novel Office.

(Continued from page 29)

things to be considered before taking such a radical step, and getting draftsmen to migrate to the country was a pretty important one. Of the men I had with me in the city, only one remains.

"It has worked out fine. I can live and enjoy life as I work. I can do twice as much in a day's work as I could in the city, because I have few interruptions, and because I live a more normal life. The average office man degenerates through lack of outdoor exercise, and from sticking too close to business. Under such conditions a man loses his perspective, whereas, if he lives in the country in touch with his business, he can do a great deal better work. Out here I can find time for lots of other things which help to make life enjoyable without neglecting business to its detriment. If I strike a tough problem, the solution of which looks impossible, I can take up something else for a time, and then go back to it from another viewpoint. When one of these fine fall days comes along, I can take a morning or afternoon off and enjoy it; in fact, I can live as I go along, and it surprises me the amount of work I can get through as compared with what I could do in the city. I have been here a little over a year and my business has shown a healthy increase, and from inquiries that have come in so far, this fall looks as though the coming year would be the biggest yet. So much for the whys and wherefores. Since I started out under my own shingle and up to date I have designed 165 motor boats of various classes and kinds that I know about. From some of my designs duplicates have been built, especially those that I designed for boat builders."



Sea Otter, owned by Captain Hugh L. Willoughby, of Philadelphia, is a 40-foot auxiliary yawl built by Swasey, Raymond & Page, Boston, designed for ocean cruising.

boats, and she is conspicuous by the height of her engines compared with the depth of hull. They stand nearly 18 inches above her coaming, and she was raced without an engine cover. She is a single-step hydroplane practically flat-bottomed, and her sides narrow considerably towards the stern, so that forward of amidships she is much wider than at aft of amidships. Her length is 26 feet. Her rudder is of polished bronze and was arranged during the race in the center of the transom, which, by the way, is very square and ugly. In fact, she is by no means a pretty craft, but there is no de-



#### RACING.

Jan. 8—10, Miami, Fla., midwinter regatta.  
Mar. 30—Apr. 4, St. Augustine, Fla., speed boat races.

#### SHOW DATES.

Jan. 31—Feb. 7, New York Motor Boat Show.  
Feb. 21—28, Toronto National Motor Boat Show.  
Feb. 28—Mar. 7, Chicago Motor Boat Show.



# MOTOR BOATING ADVERTISING INDEX

A		P	
Aaron Automatic Bilge Pump Co.....	82	Packard Electric Co.....	95
American Engine Co.....	94	Page Engineering Co.....	82
American Life Saving Garment Co.....	78	Palmer Bros.....	64
American Motor Parts Co.....	96	Pearl Machine Co.....	68
American Steam Gauge & Valve Co.....	78	Peerless Engine Co.....	90
American Thermos Bottle Co.....	72	Pioneer Boat & Pattern Co.....	98
Anderson Engine Co.....	96	Planhard Mfg. Co.....	68
Anderson Spark Plug Co.....	66	Pneumatic Mfg. Co.....	78
Apple Electric Co., The.....	78	Pockel, T. S., & Co.....	60
Aristos Co., The.....	78	Pope Motor Car Co.....	73
Automatic Bilge Bailer Co.....	78	Pyrene Mfg. Co.....	99
Automatic Machine Co., The.....	77		
B		R	
Balbridge Gear Co., The.....	93	Racine Boat Co. (Racine).....	86
Bath Marine Construction Co.....	98	Racine-Truscott-Shell Lake Boat Co.....	64
Binney, Arthur.....	60	Red Wing Motor Co.....	81
Boston Varnish Co.....	78	Regal Gasoline Engine Co.....	87
Boucher Mfg. Co., H. E.....	78	Reid Wheel Co.....	64
Bowes & Mower.....	60	Reliance Motor Boat Co.....	70
Braznell, Jos. H.....	78	Rice Bros. Co.....	64
Bridgeport Bronze Marine Paint Co.....	78	Richardson, G. R.....	64
Bridgeport Motor Co., Inc.....	65	Robbins Co., L. D.....	68
Brooks Mfg. Co.....	66	Roberts Motor Co.....	97
Brown-Collins Gas Engine Co.....	66	Robertson Bros.....	70
Bruns, Kimball & Co., Inc.....	50-60	Roper & Co., C. F.....	72
Bryant & Berry Co.....	93	Rose Mfg. Co.....	73
Buermann, August.....	70		
Buffalo Gasolene Motor Co.....	100	S	
Byrne, Kingston & Co.....	81	S. R. Mfg. Co.....	68
C		Samson Cordage Works.....	82
Caille Perfection Motor Co.....	94	Sands & Sons Co., A. B.....	79
Camden Anchor-Rockland Mach. Co.....	93	Scripps Motor Co.....	95
Campbell Co., A. S.....	78	Seaman, Stanley M.....	45
Campbell Motor Co., The.....	88	Shaw Propeller Co.....	68
Canadian Fairbanks-Morse Co., Ltd.....	66	Sherman, Eugene M.....	68
Cape Cod Power Dory Co.....	68	Smalley-General Co.....	70
Carlisle & Finch Co.....	90	Smith & Co., Edwards.....	64
Carlyle Johnson Mach. Co., The.....	88	Smith-Serrell Co., Inc.....	90
Carpenter & Co., Geo. B.....	93	Snow & Petrelli Mfg. Co.....	95
Chelsea Clock Co.....	68	Splitdorf Electric Co.....	98
Chicago Varnish Co.....	68	Standard Co., The.....	76
Classified Advertisements.....	57-58	Standard Gas Engine Co.....	87
Cleveland Auto Boat Mfg. Co.....	96	Standard Motor Construction Co.....	2nd Cover
Coe (W. H.) Mfg. Co.....	78	Standard Oil Co.....	68
Columbian Brass Foundry.....	87	Stanley Co.....	70
Cosmopolitan.....	70	Star Ball Retainer Co., The.....	96
Cox & Stevens.....	44-60	Stearns-McKay Mfg. Co.....	70
Cragg Motor Mfg. Co.....	66	Sterling Engine Co.....	Back Cover
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Crockett Co., The David B.....	68		
Curtiss Co., J. H.....	78	T	
Curtiss Aeroplane Co., The.....	63	Tams, Lemoine & Crane.....	47
D		Thermex Silencer Works.....	68
Darrow Steel Boat Co.....	66	Thomas & Co., W. E.....	72
Davis Boat Works Co., The.....	72	Thompson, Lawrence M.....	60
Dayton Electrical Mfg. Co.....	68	Tiebout, W. & J.....	64
Defoe Boat & Motor Works.....	68	Times Square Auto Co.....	91
DeLong Engine Co.....	66	Toppan Boat Co.....	72
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Doman Co., H. C.....	91	Trebert (H. L. F.) Engine Works.....	64
Doubleday, Page & Co.....	70	Trimount Rotary Power Co.....	99
Driver-Harris Wire Co.....	68	Tuttle Motor Co.....	72
Durkee & Co., C. D.....	91		
E		U	
Edison, Inc., Thomas A.....	79	U. S. Light & Heating Co., The.....	92
Elec-Bayonne (The Electric Launch Co.).....	2d Cover	Universal Machine Co.....	98
Eldredge (Albert E.) Corp.....	96	Universal Motor Boat Supply Co.....	99
Electric Goods Mfg. Co.....	68	Universal Safety Mattress Co.....	66
Electric Tachometer Co., The.....	68		
Emmons Specialty Co.....	68	V	
Erd Motor Co.....	84	Valentine & Co.....	61
Evans Stamping & Plating Co.....	62	Van Blerck Motor Co.....	74-75
Evinrude Motor Co.....	88	Vim Motor Co.....	88
F		Vulcan Engine Works.....	72
Fairbanks, Morse & Co.....	64		
Fairhaven Iron Foundry Co.....	68	W	
Fay & Bowen Engine Co.....	94	Waterbury Welding Co.....	90
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Frishie Motor Co.....	90	Wells, Theodore D.....	60
G		Whittaker, Morris M.....	60
Galusha, A. L., & Co.....	62	Whittelsey & Whittelsey.....	60
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Goblet-Dolan Mfg. Co.....	68		
Gray Motor Co.....	69	Y	
H		Yankee Co., The.....	68
Gray-Hawley Mfg. Co.....	68	Yongs, Wm. P. & Bros.....	64
Gries Engine Co.....	66		
Grimm Mfg. Co.....	66		
I			
Hacker, John L.....	64		
Hall Co., W. S.....	96		
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Henricks Novelty Co.....	68		
Herbert & Huesgen.....	72		
Holmes Motor Co., Inc., The.....	3rd Cover		
Horton, Frank J.....	85		
Howard Cruiser Works.....	70		
Hurd, A. W.....	60		
Hyde Windlass Co.....	89		
Hydrex Silent Exhaust Works.....	72		
J			
Ideal Switch Co.....	72		
K			
Janney, Steinmetz & Co.....	95		
Jencick Motor Co.....	70		
Jennings Yacht Agency.....	51		
Jerolamon, Willard A.....	72		
John, William Edgar.....	60		
Jones, Frank Bowne.....	49		
Jones Co., S. M.....	86		
Jordan Bros. Lumber Co.....	72		
L			
Kahlenberg Bros.....	99		
Kenyon Co., R. L.....	62		
Kermath Mfg. Co.....	92		
Koven & Bros., L. O.....	68		
Krice Carburetor Co.....	98		
Kroh Mfg. Co.....	90		
Kuhls, H. B. Fred.....	64		
M			
Lamb Engine Co.....	100		
Lawley, Geo. & Son, Corp.....	64		
Leary Gasolene Engine Co.....	64		
Leiby Engineering Co., The.....	72		
Leece-Neville Co., The.....	66		
Lisk, Geo. A.....	70		
Lockwood-Ash Motor Co.....	89		
Loew-Victor Engine Co.....	3rd Cover		
Luders Marine Construction Co.....	66		
N			
McClellan Top & Hood Co.....	72		
McFarland Foundry & Machine Co.....	82		
McQuay-Norris Mfg. Co.....	97		
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Marine Compass Co.....	64		
Mathia Yacht Building Co.....	66		
Matthews Boat Co., The.....	83		
Maximotor Makers.....	70		
Mea Magneto.....	72		
Mechanical Devices Co., Inc.....	64		
Mercury Motor Co.....	86		
Michigan Steel Boat Co.....	70		
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Morgan Mfg. Co.....	96		
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Morristown Boat & Engine Works.....	84		
Morris Co., A. S.....	96		
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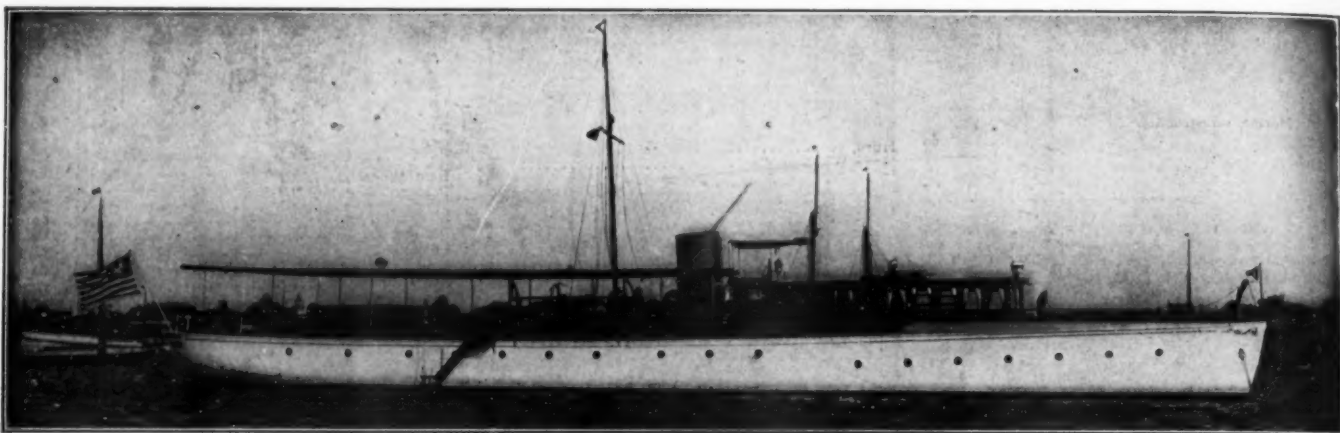
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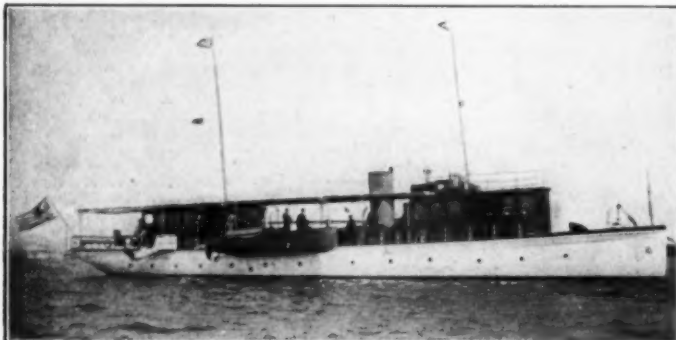
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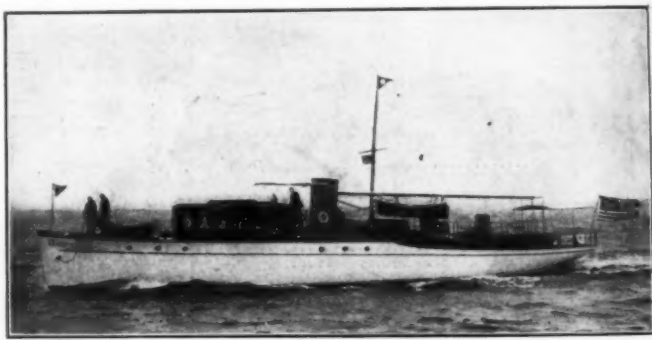
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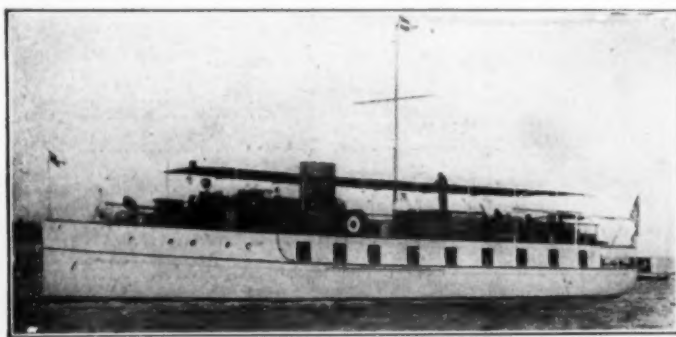
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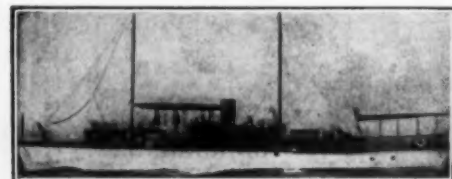


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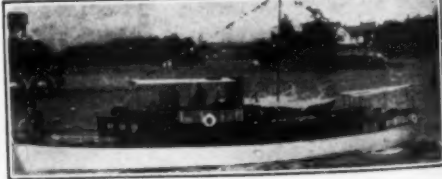


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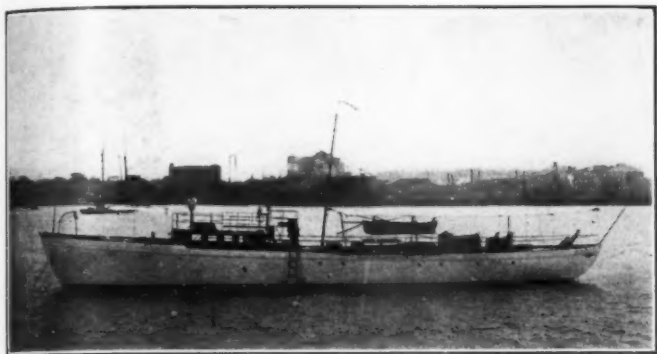
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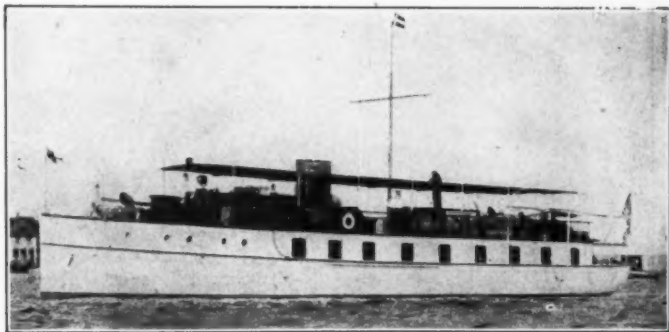
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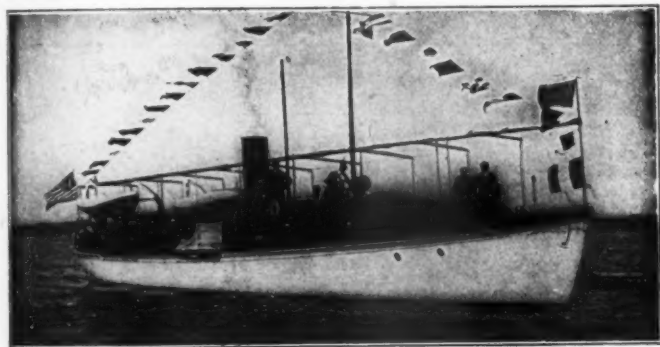
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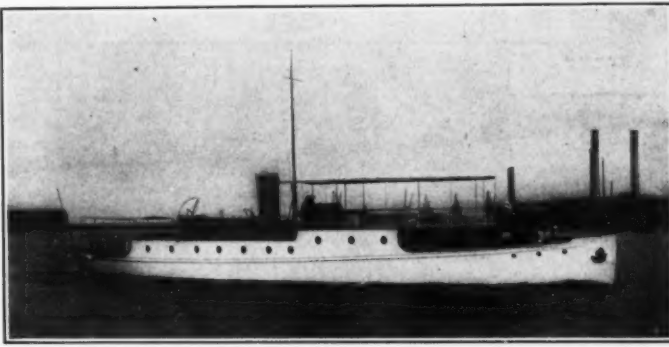
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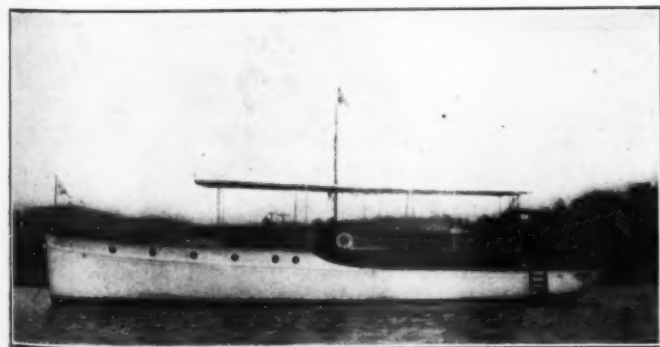
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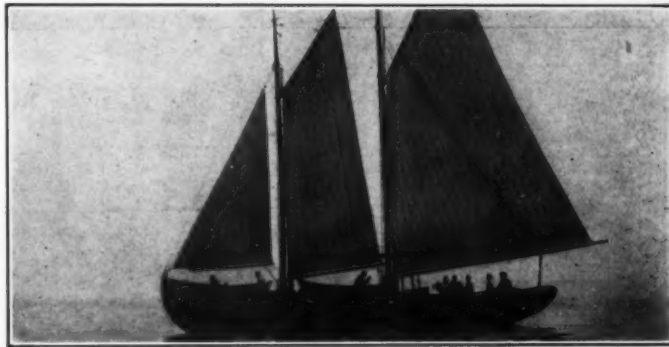
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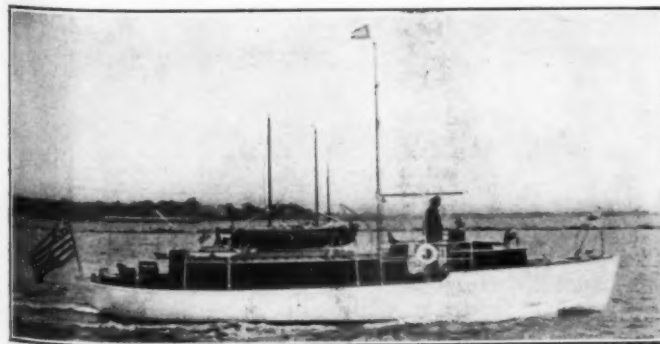
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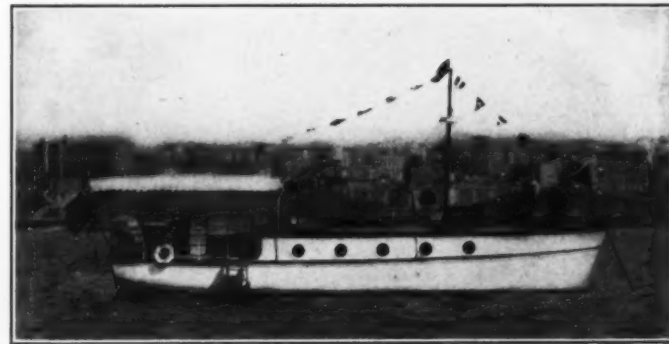
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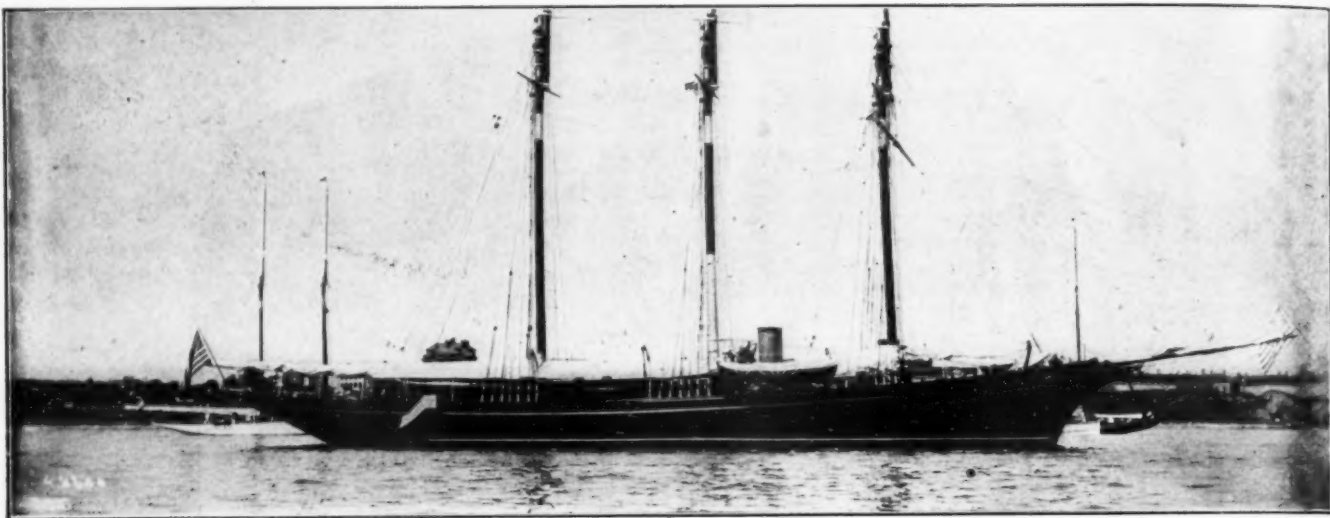


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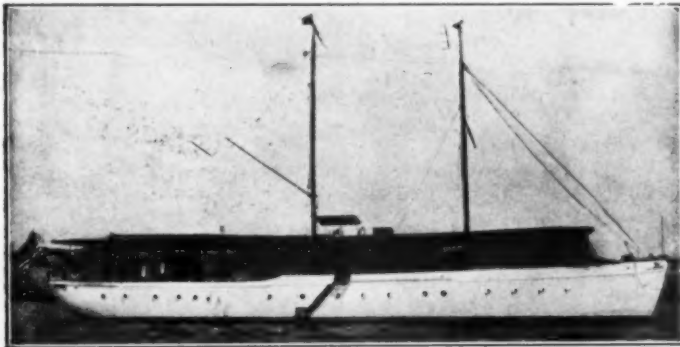
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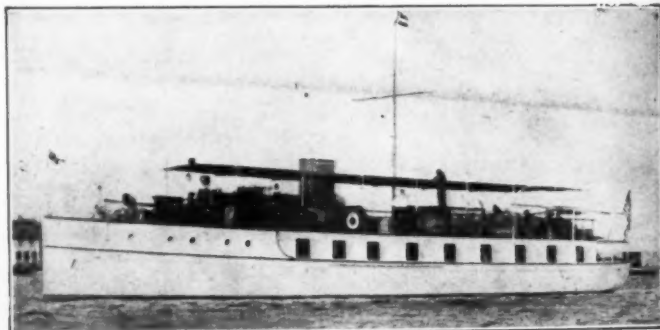
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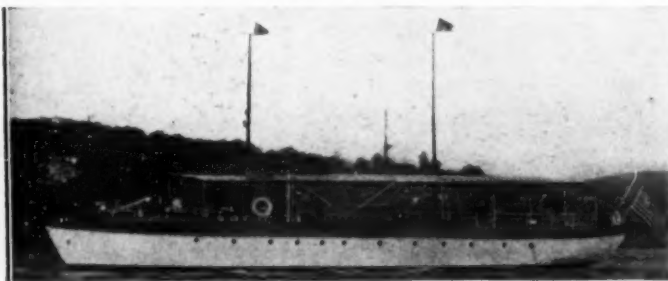
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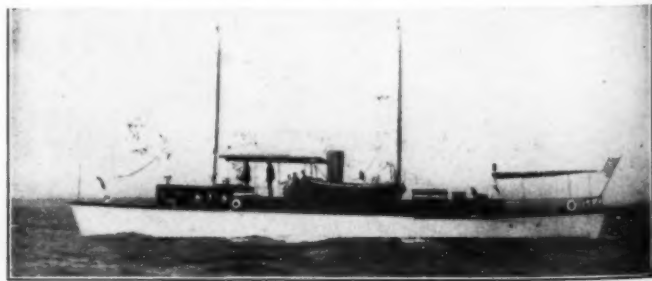
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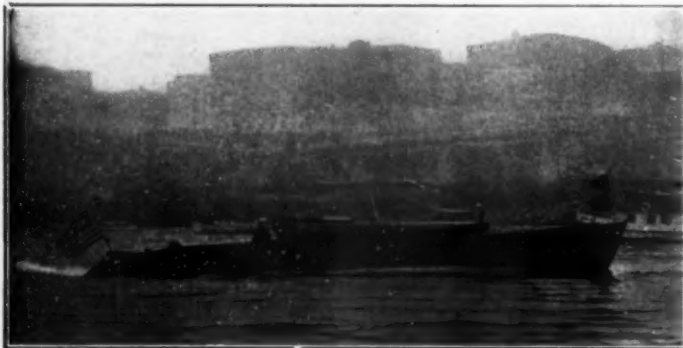
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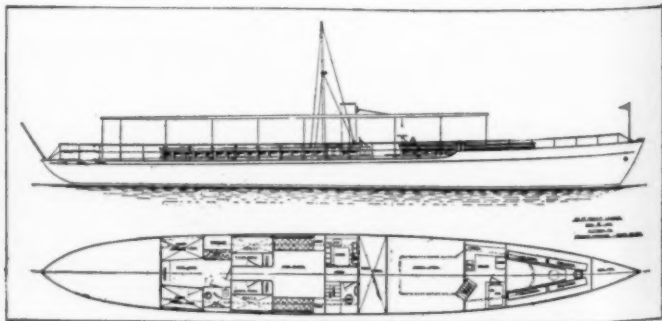
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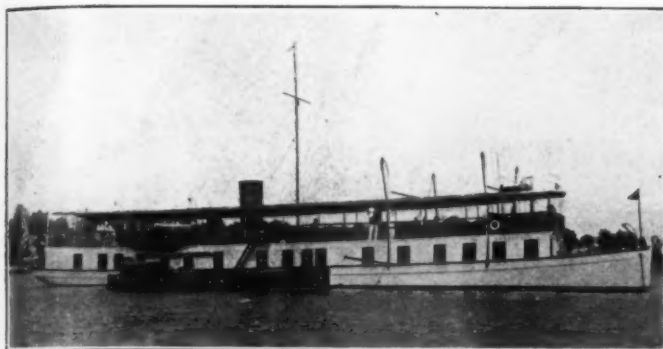
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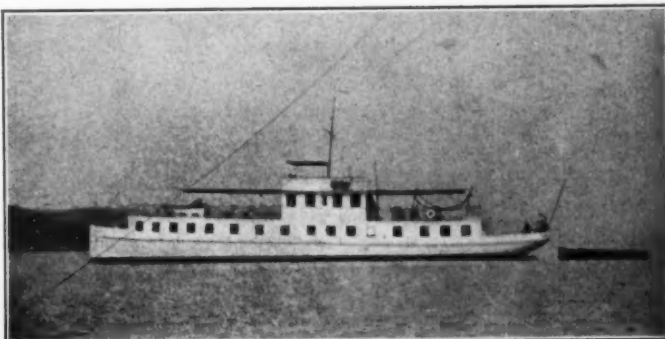
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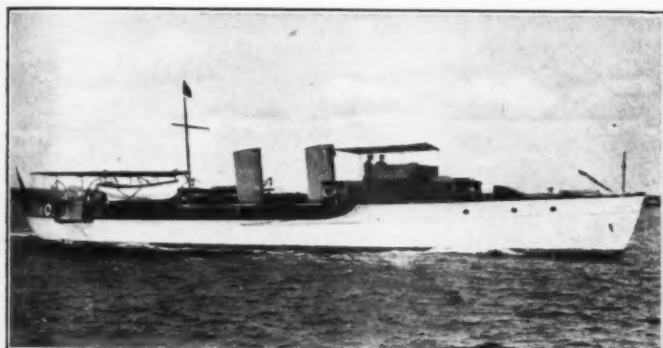
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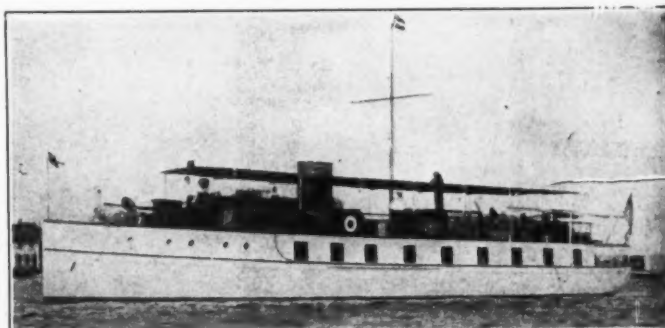
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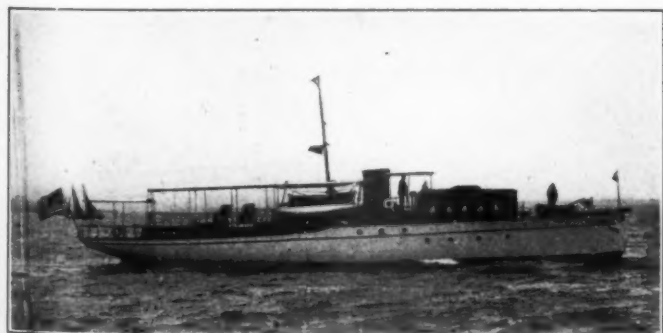
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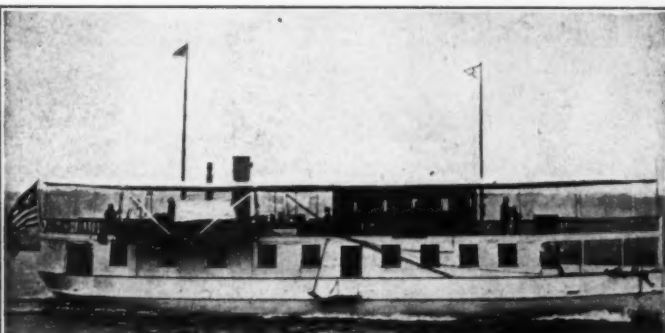
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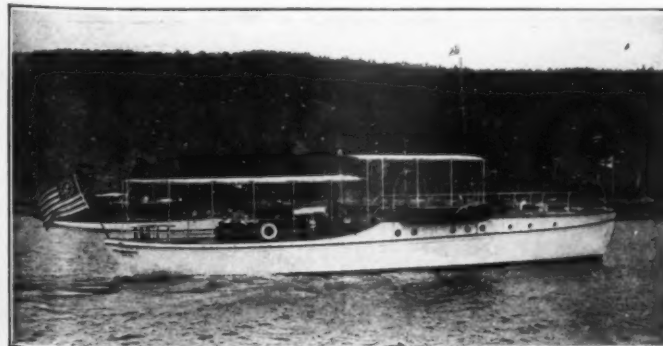
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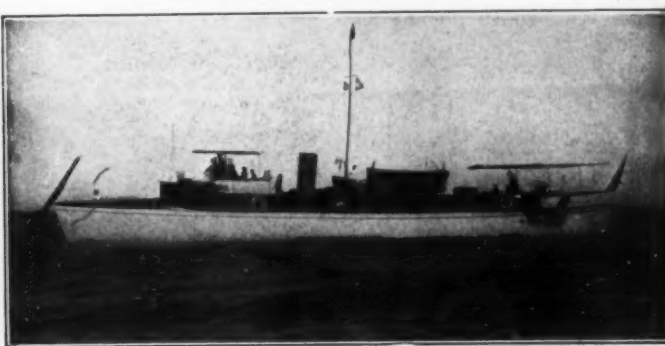
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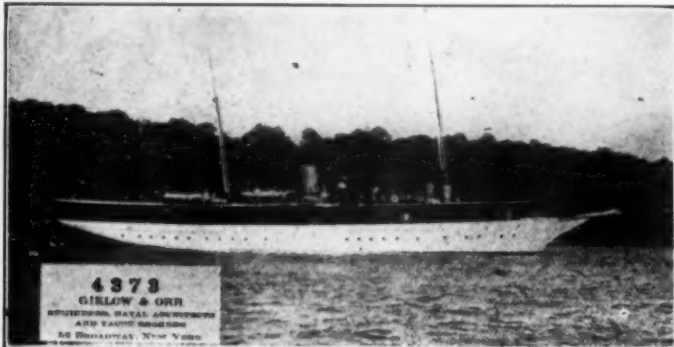
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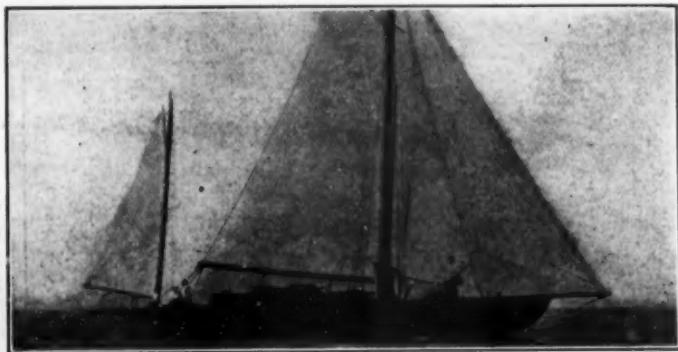


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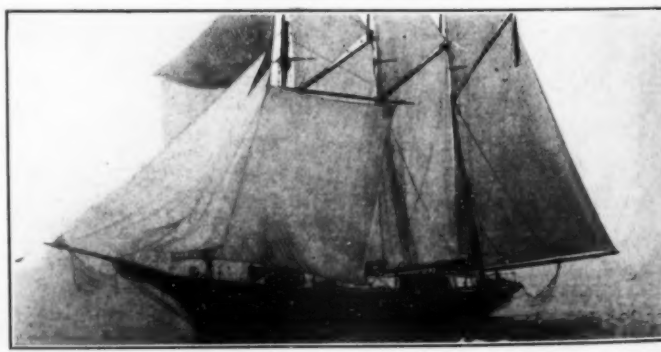
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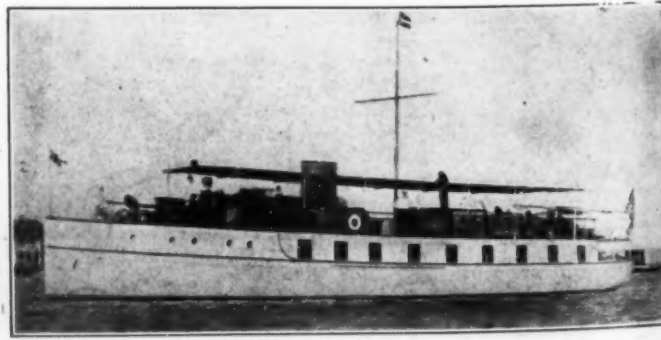
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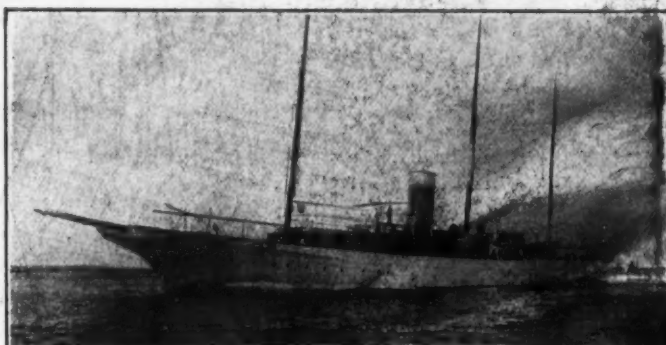
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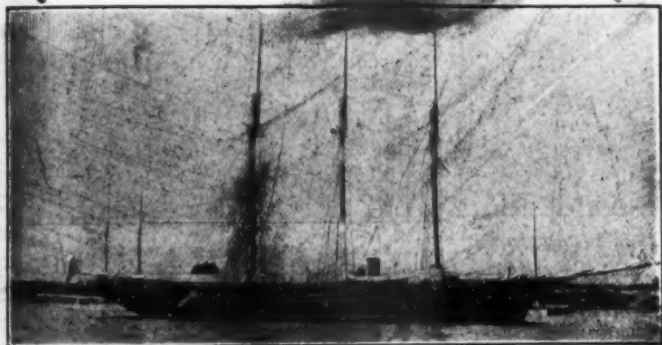
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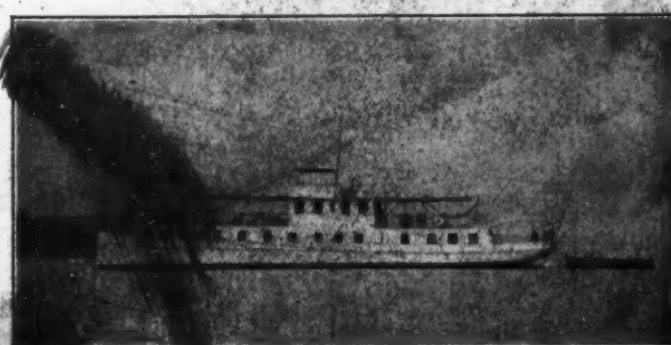
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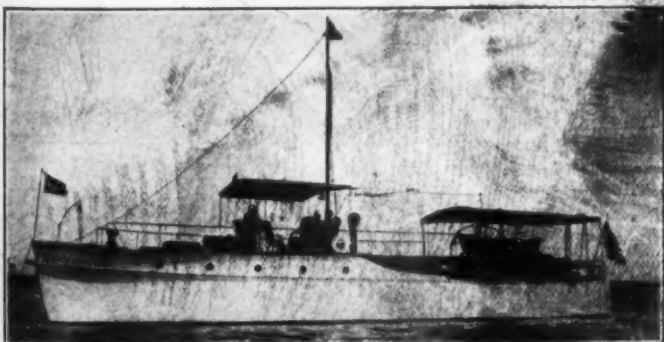
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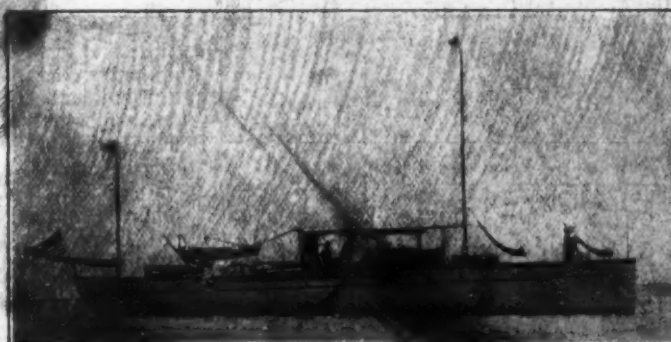
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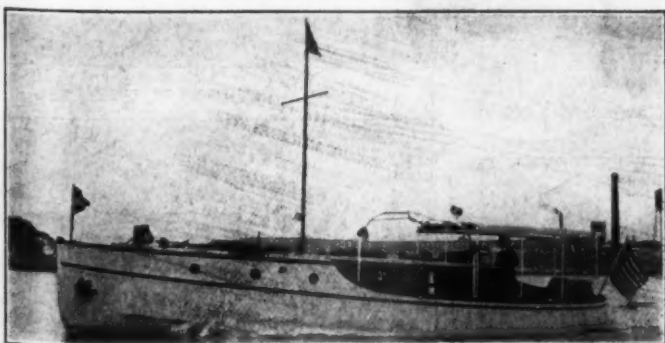
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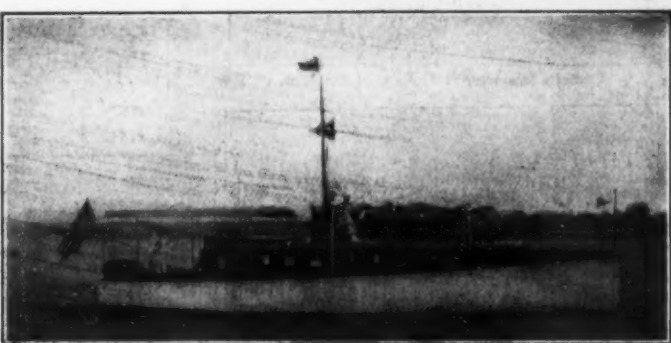
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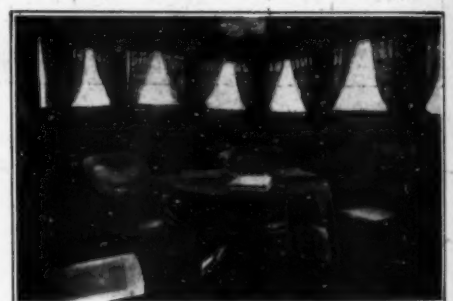


The spacious after deck with two tenders.



Interior of forward deck house.

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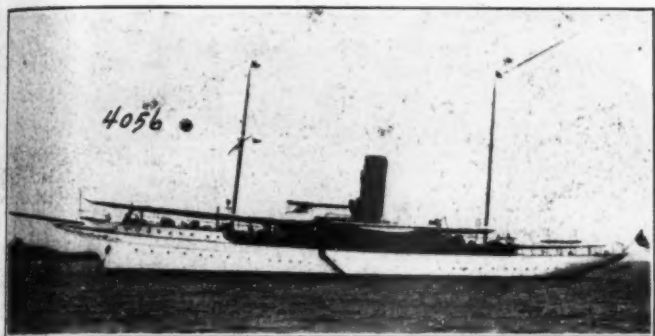
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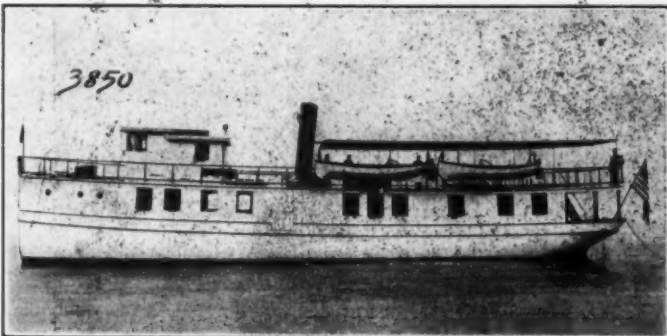
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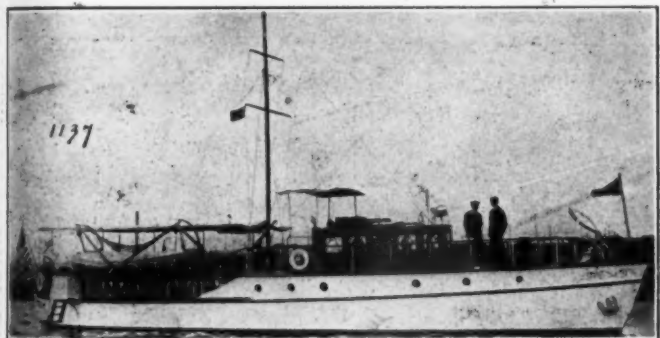
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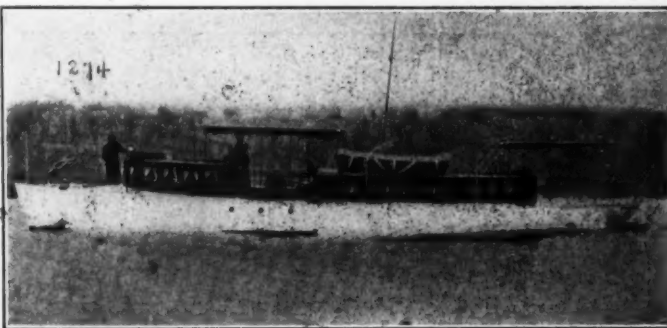
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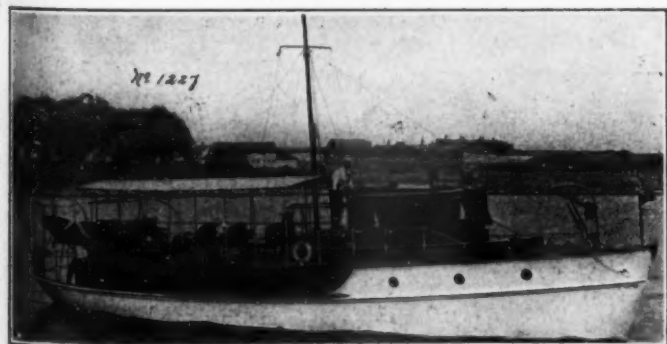
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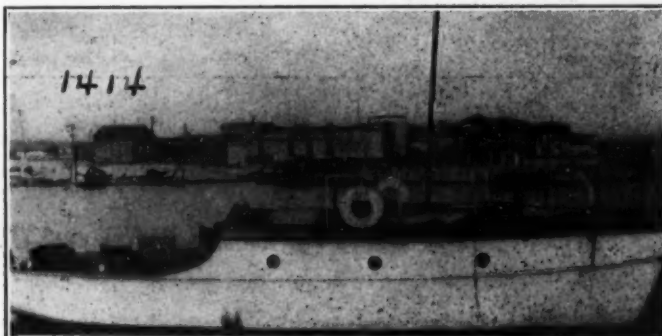
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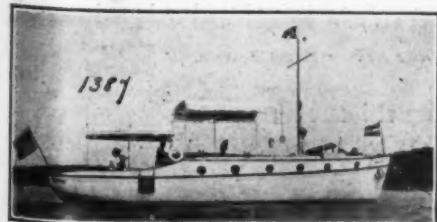
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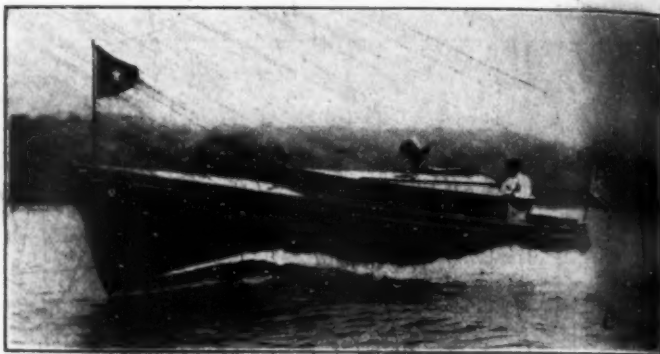
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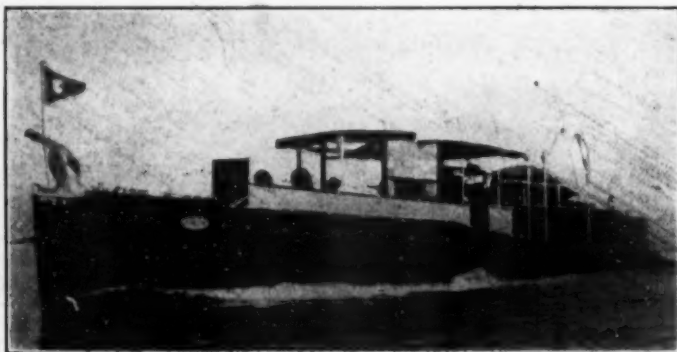
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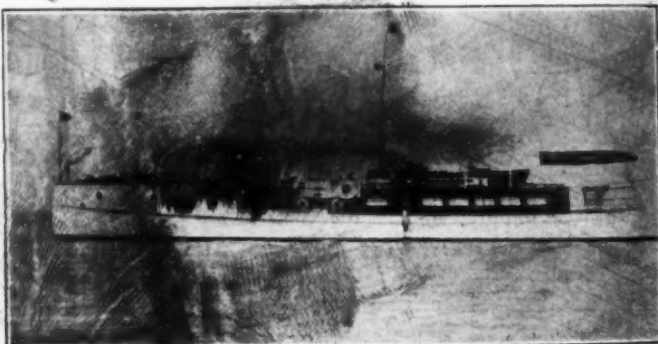
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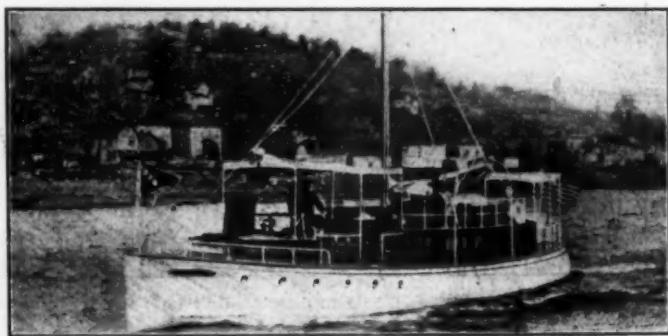
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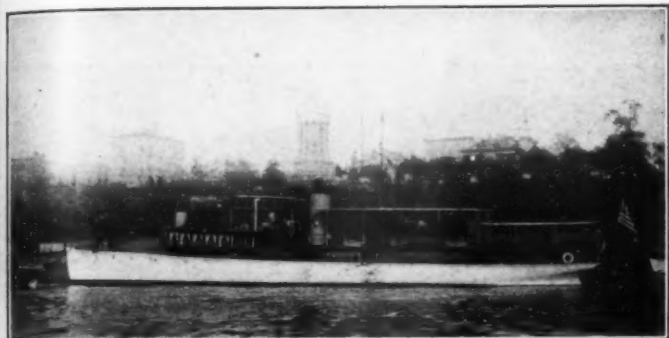
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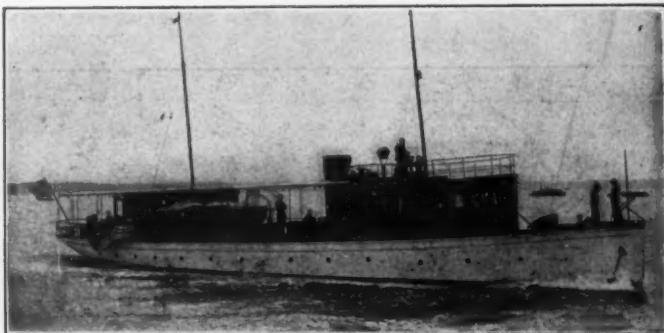
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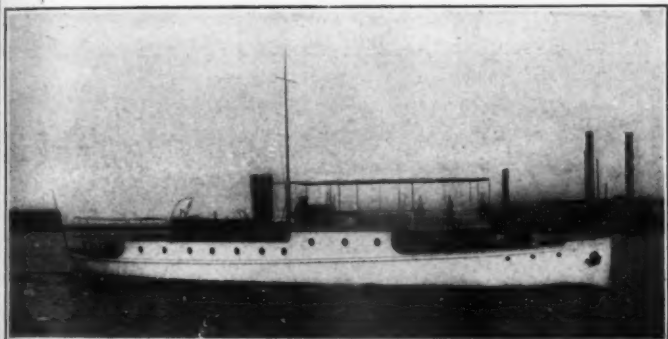
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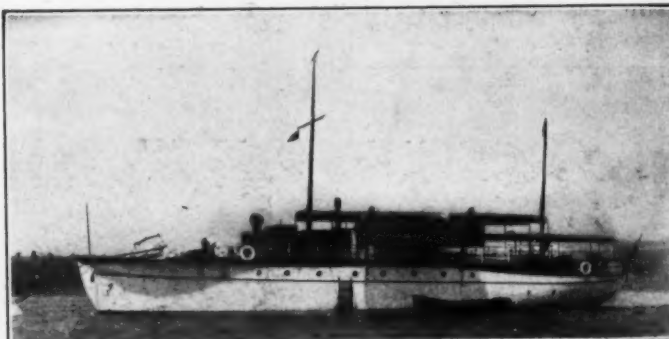
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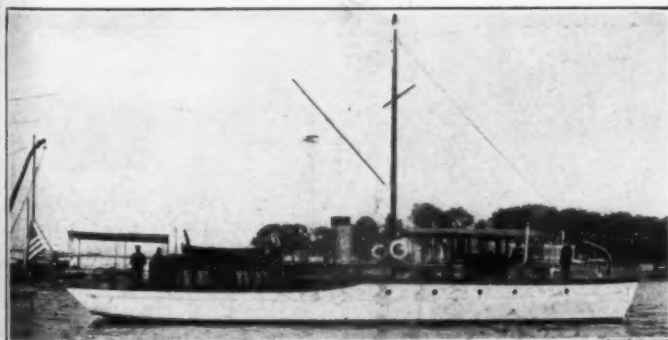
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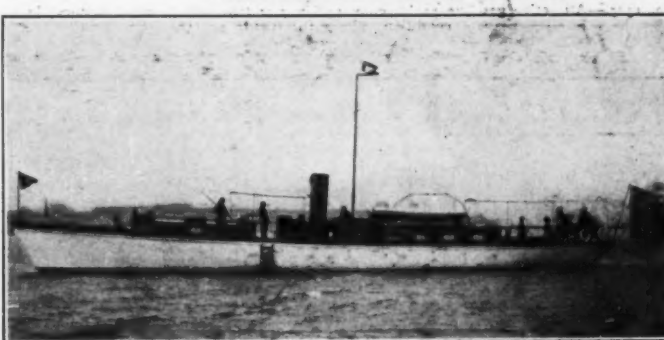
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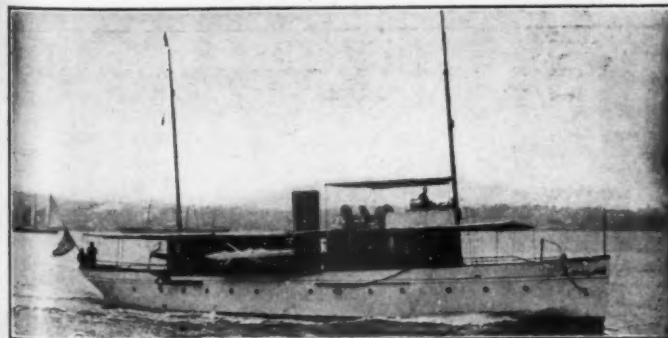
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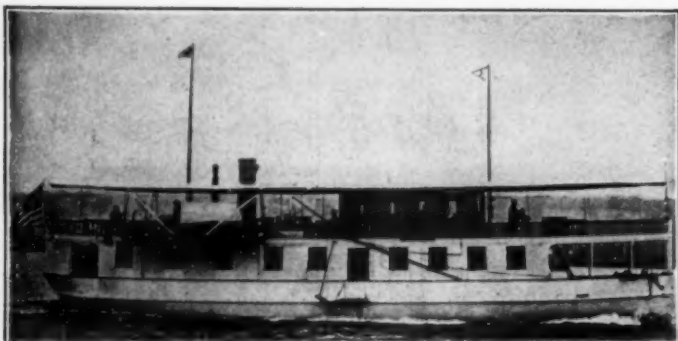
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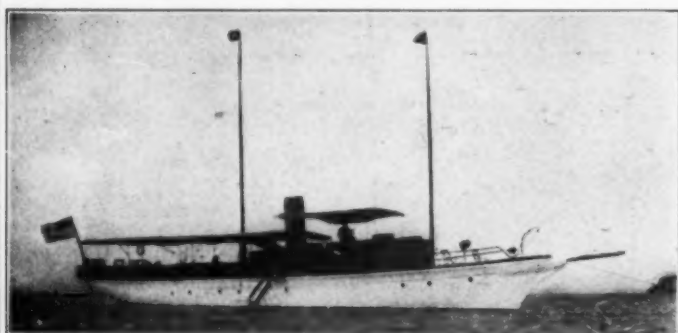
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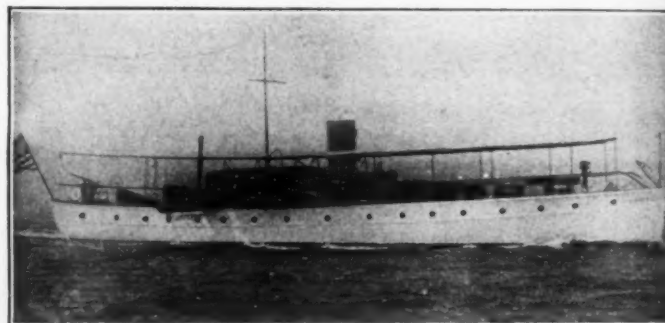
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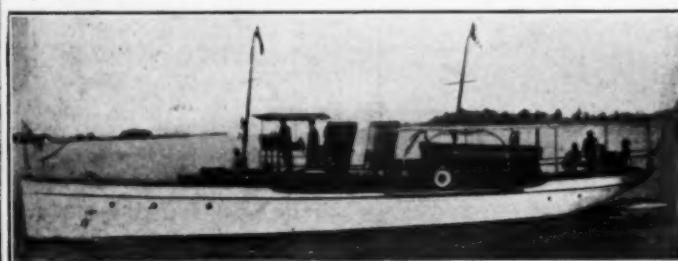
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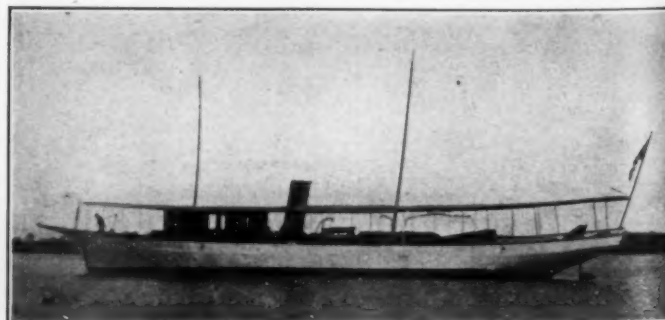
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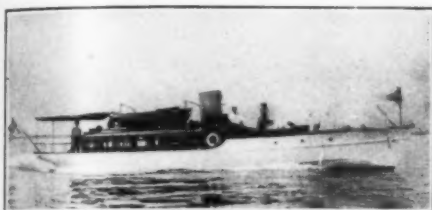
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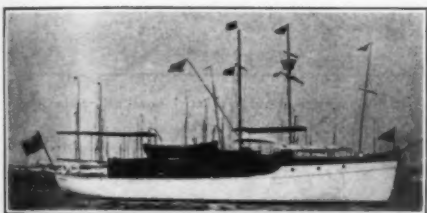
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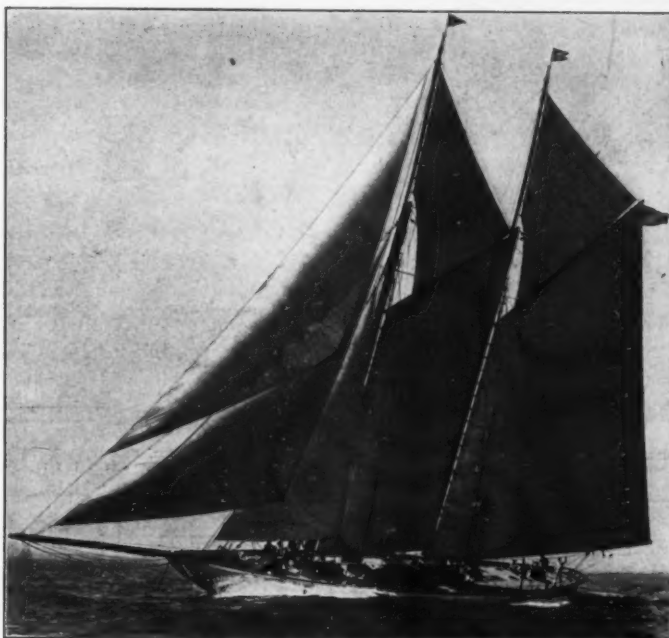
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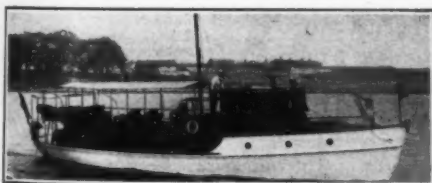
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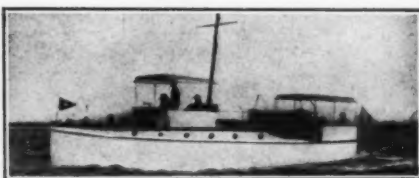
No. 1693.—Bridge deck cruiser, 50 ft. x 11 ft.; 20th Century motor.



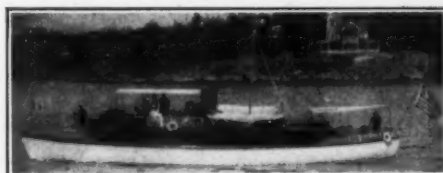
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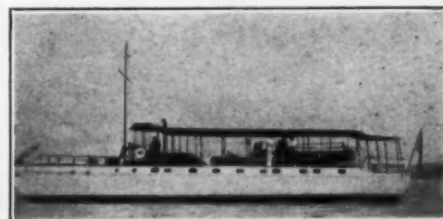
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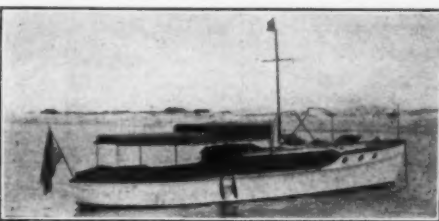
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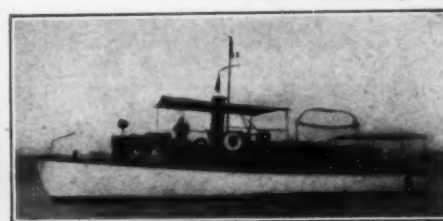
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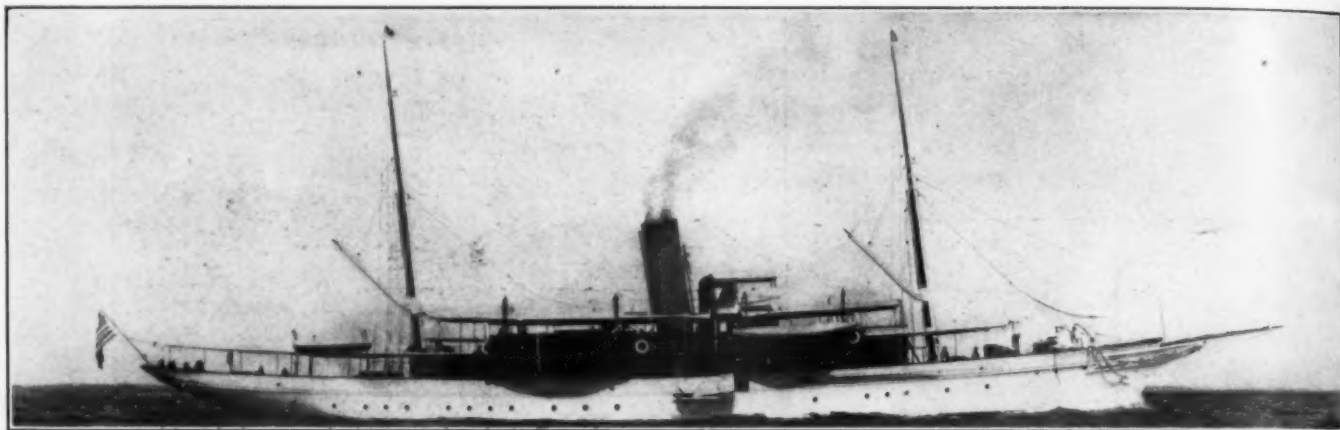
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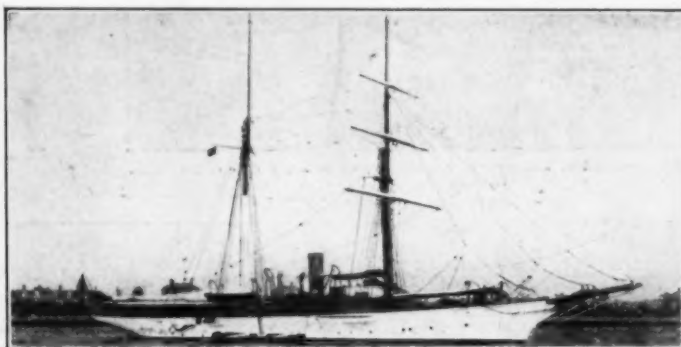
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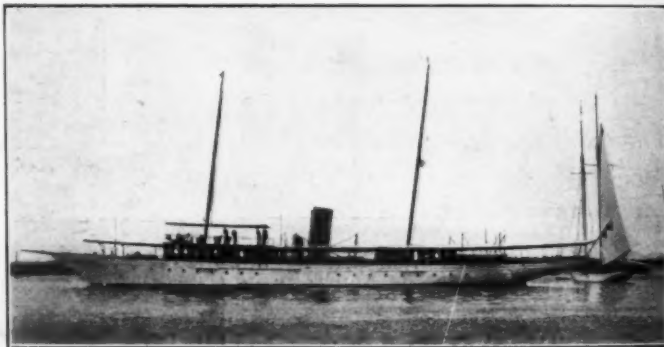
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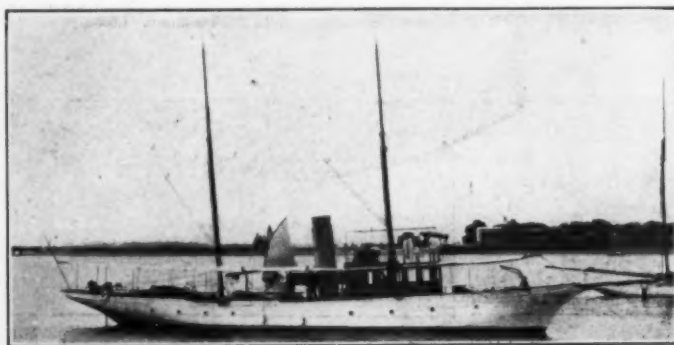
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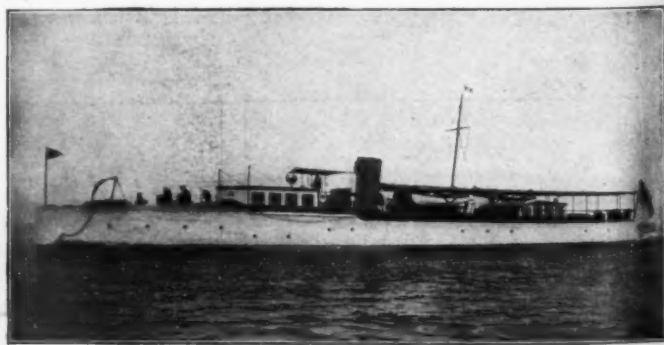
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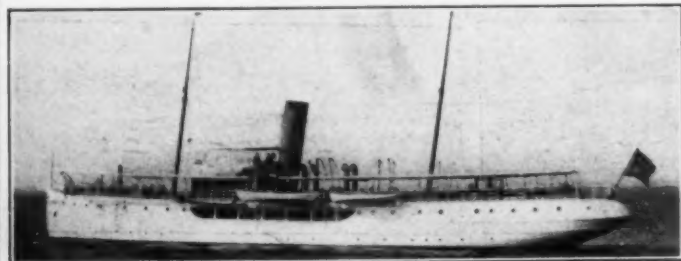
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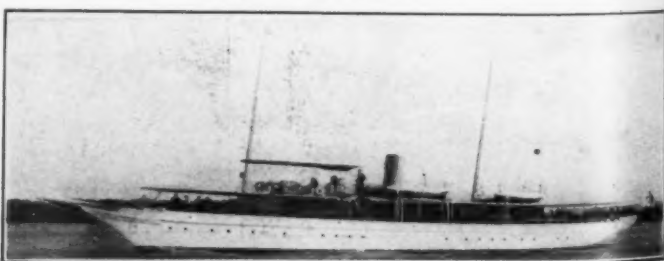
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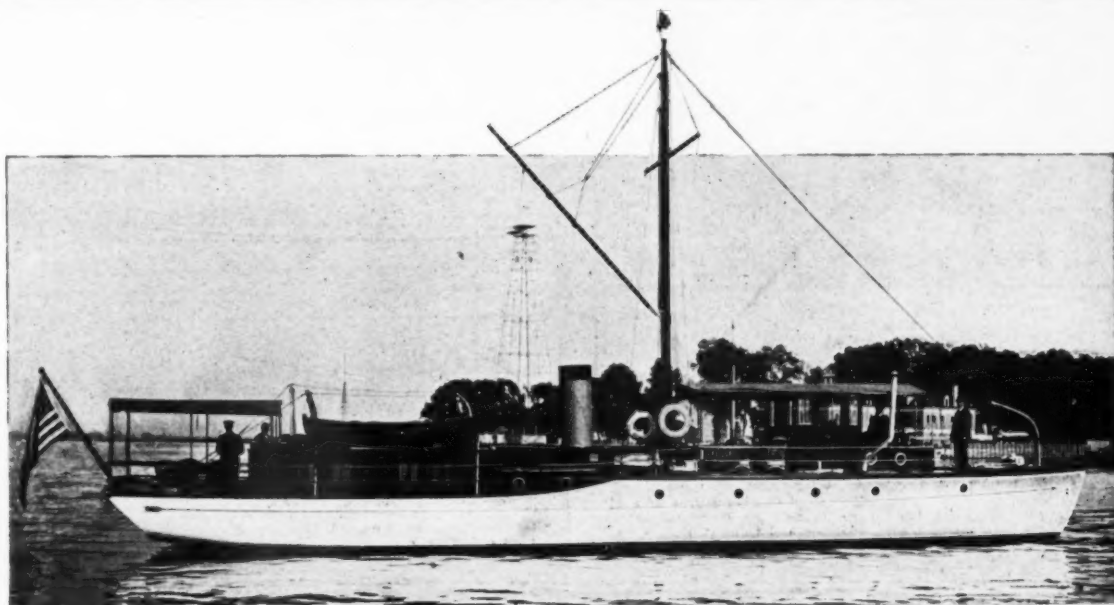


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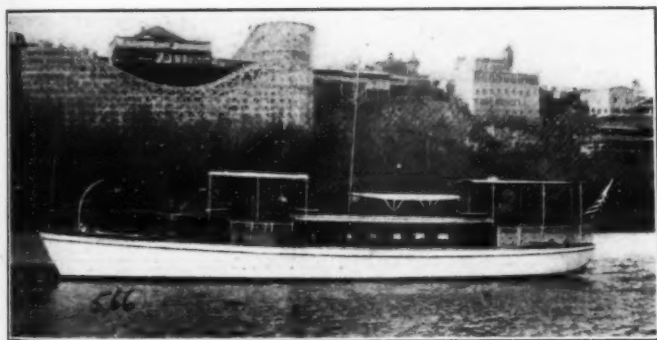
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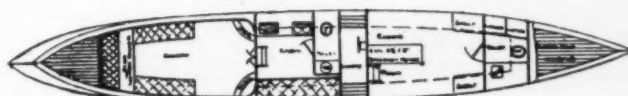
**FOR SALE**—Auxiliary Yawl ALGA, 42 ft. 9 in. O.A., 12 ft. 6 in. beam, 3 ft. draft, 11 h.p. engine. Particulars on application. F. F. Farrell, New Orleans.

**SECOND-HAND** Evinrude motor, in first-class condition. Address Box 10, care of Motor Boating.

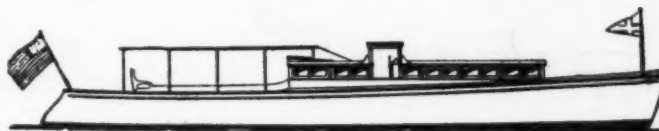


**FOR SALE**—26-ft. launch, 6-ft. beam, trunk cabin, 7 h.p. make-and-break Bridgeport engine; speed over 7 knots; second season in use. \$300.00 buys boat completely equipped, including anchor, compass, nine life-preservers, etc. Address H. R. Johnson, 16 Newhall St., Lynn, Mass.

**HOUSEBOAT**—Sacrifice; sickness; sloop rigged; no motor; length, 37; width, 10; draft, fourteen inches. Perfect condition; full headroom; fully outfitted to sail and live on. Now at Eaugallie, Florida. Address H. H. Raymond, Northeast, Pennsylvania.



2117



No. 2187.—Bargain.—Fast day cruiser; 60 x 8.6 x 3 ft. Speed 16-19 miles; 90-100 H. P. Speedway motor. Large cockpit aft. Best construction; mahogany finish throughout. Reasonable offer desired. Cox & Stevens, 15 William St., New York.

**DREAM**—Winner of 1912 and 1913 Bermuda races. Finest and best equipped cruising and ocean racing motor boat on the market; very roomy. Apply to any broker or Bowes & Mower, Lafayette Building, Philadelphia.

**FOR SALE**—Elmore two-cycle, four-cylinder automobile engine; full 36 H. P.; Atwater Kent ignition system; Hancock mechanical sight-feed oiler and clutch; ready to run. Would make a fine marine outfit. First \$100 takes it. George J. Olney, Westerville, N. Y.

**TWENTIETH** Century motor for sale; 50-65 H. P., 4-cylinder, full equipment, used three months, price \$1,650. More power required, reason for selling. Whittelsey & Whittelsey, 11 Broadway, New York City. Phone Rector 4718.

**A BARGAIN**—6-cylinder Speedway engine, 50-60 h.p., all latest improvements, Bosch magneto, Kingston carburetor, copper tank, bronze shaft. Room 803, 74 Broadway, New York City.

## What Have You For Sale? What Do You Want To Buy?

Every motor boatman, every yacht owner, sooner or later, has something to sell—something for which he has no further use—a boat, an engine, some equipment or other marine article that is just as good for service as ever. The fact that he no longer needs it does not diminish its value to the man who has a use for something of the kind.

There is a good customer looking for every article which is in serviceable condition. The question is to find that customer. That is what Motor Boating's Market Place is for. Send us an advertisement of your discarded articles today.

**J. S. HILDRETH, Adv. Mgr., Motor Boating**

**119 West 40th Street, New York**

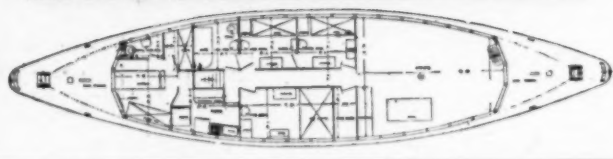
## THE MOTOR BOATING MARKET PLACE

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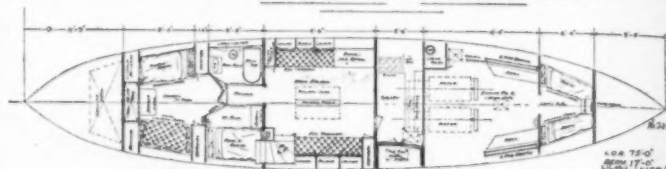
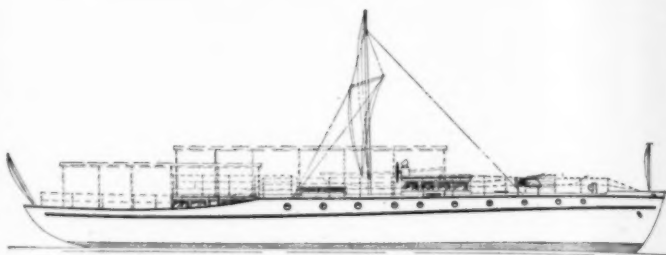
Opportunities  
for the  
Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR Boating.



### FOR SALE OR CHARTER—CRUISING HOUSEBOAT.

80 feet long x 18 feet beam, practically new. Has all the conveniences of a city apartment—running water and acetylene gas in all staterooms—large saloon and promenade under awnings. Has far more accommodations and comfort than a yacht twice the size. Very easily and economically handled. 37 H. P. engine, speed 7 miles. Address Mr. A., 1420 W. Baltimore St., Baltimore, Md.



For Charter or Sale—In commission now in Florida, motor yacht, 75 ft. x 17 ft. x 3 ft. 6 in.; twin-screw 20th Century motors; electric lights; large saloon; two staterooms; bath; galley; excellent crew's quarters; abundance of deck room; ideal boat for Southern cruising. Whittelsey & Whittelsey, 11 Broadway, New York City. Phone, Rector 4718.

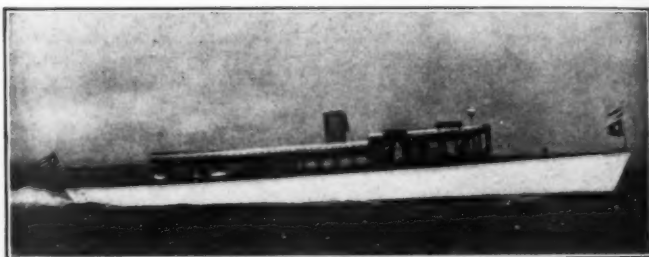


Make use of your old engine. Speed, 15-20 miles. Draft, 5 inches. Just the thing for rivers and lakes.

SAFE, SPEEDY AND ECONOMIC  
Plans \$5.00

J. Brister

Mamaroneck, N. Y.



For Sale.—Boat "Sis"; 28 ft. long, 8-ft. beam, 3-ft. draft; finished with solid mahogany, 125 six-cylinder Craig motor, in good condition; speed, 20 miles. Designed by W. Gardner; built by J. E. Montell. Very fine winter covering with outfit. Fitted out for day sailing; would consider exchange for very fine boat; one man control; about 40 ft. Fred F. Lovejoy, 41 Second St., East Norwalk, Conn.

## Sell Your Motor Boat or Motor in This Market Place

When a man is looking for a certain article he naturally refers to the place where he will be most likely to find what he wants. Thousands of readers know of the bargains that are always listed in the Motor Boating Market Place, so they look here first.

Successful advertisers follow the same course as those who are looking for something—they place their advertisements where they are most likely to be seen by prospective buyers.

Motor Boating has a guaranteed circulation in excess of 25,000 copies per issue, and every copy is seen by several persons. In this way practically every motor boat enthusiast in the country is reached, as well as the principal foreign markets. In this great audience there are sure to be several prospective customers for every article you want to sell.

We will write your advertisement you will send full information and tell the amount of space you wish used. Enclose remittance to cover size of advertisement you want, figuring at the rate of 3 cents per word, each insertion.

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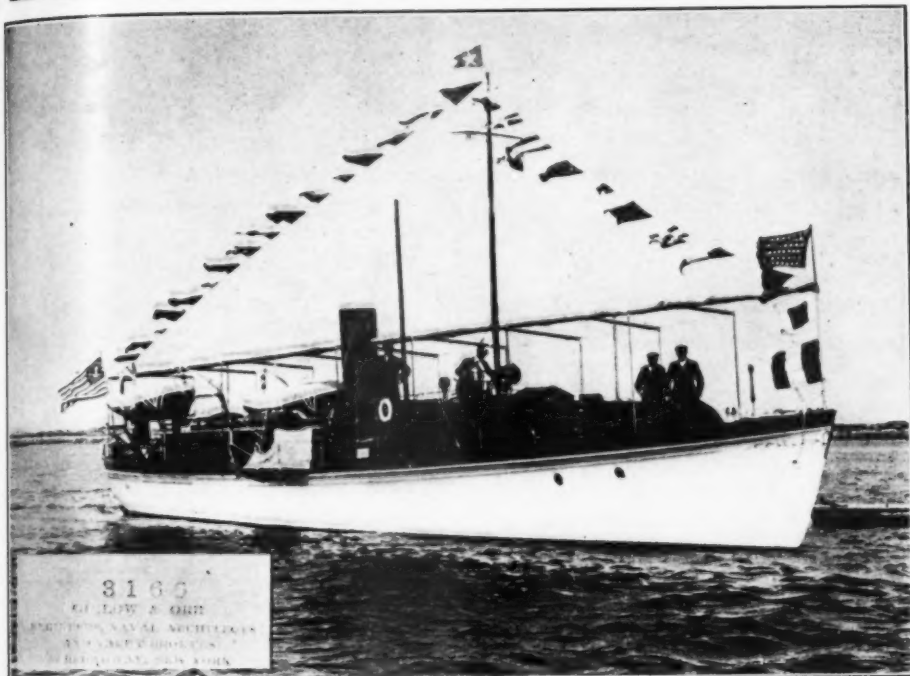


# THE MOTOR BOATING MARKET PLACE

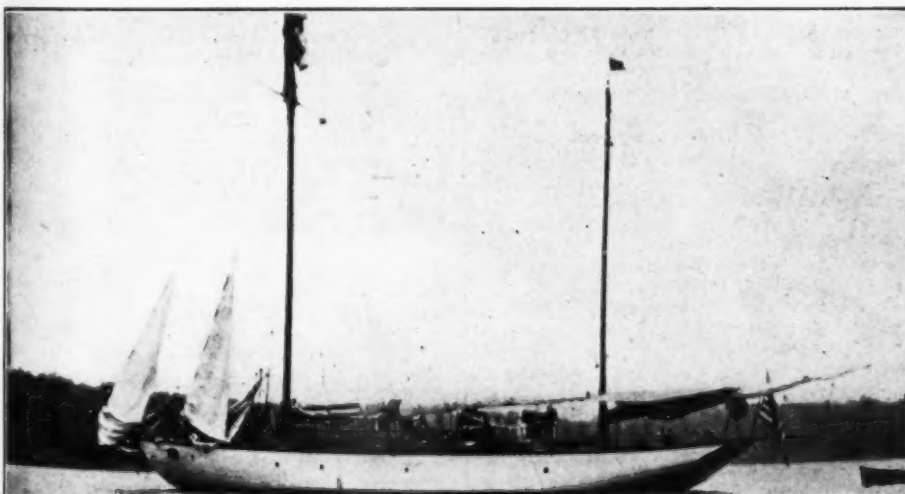
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**Opportunities  
for the  
Motor Boatman**

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



No. 3166.—Bargain—High-class twin-screw motor yacht, 93 ft. x 13 ft. 6 in. x 4 ft. 3 in.; speed up to 15 miles. Very strongly constructed; has always been well taken care of, and with the excellent ventilation, makes yacht especially adapted for cruising in warm climates. Hull below waterline is copper sheathed. Inside and outside joiner work mahogany. Equipped with two 6-cylinder 100 h.p. air starting and reversing "Standard" engines. Fuel capacity 800 gallons. Headroom 7 feet. Equipped with independent electric plant, including electric lights, electric heaters, electric windlass and searchlight. Gielow & Orr, Naval Architects, Engineers and Yacht Brokers, 52 Broadway, New York.



No. 3303.—Decided bargain. C. B. auxiliary ketch. 97 ft. x 76 ft. x 20 ft. x 5 ft. 6 ins. draft. Built 1910. Has flush deck with 10 ft. cockpit. Two double and two single staterooms; saloon, 15 ft. long; headroom, 7 ft. Ratsey sails; 4 cylinder 40-65 H. P. Murray & Tregurtha engine; speed under motor, 8 miles. Independent electric light plant. Unusually roomy vessel, for service in any waters. Numerous skylights, ports and hatches give excellent ventilation. Remarkably fine seaboat. Well equipped. Gielow & Orr, Naval Architects, Engineers & Yacht Brokers, 52 Broadway, New York.

I HAVE secured the unsold 1912 product of prominent marine engine company. Can therefore sell the few remaining at prices that are right. Full factory guarantee. Four cylinder, 4 cycle, 60 H. P. medium duty. Single cylinder, 4 cycle, 6 H. P. medium duty. Also 1911 4 cylinder, 40 H. P. Trebert, 5 x 5 in. One 1912, 4 cylinder, 24 H. P. Waterman. An exceptionally high grade 100 H. P., 4 cylinder, 4 cycle racing engine built by the best shop in the country; duplicates in famous racing boats. "Exceptional," care MoToR BOATING.

CANADIANS, Second-hand engine bargains. Send for list. Guarantee Motor Company, Hamilton, Ont., Canada. 73 Bay Street, North.

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

BROKEN cylinders and crank cases welded. Worn cylinders rebored. Scored cylinders repaired, \$12. See our ad, Page 90. Waterbury Welding Company, Waterbury, Conn.

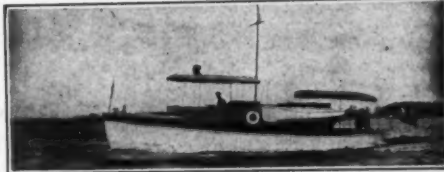
FOR SALE.—A 71-foot, twin-screw gasoline passenger boat. She is about 14 feet beam and has a draft of 5½ feet. She can make twelve miles an hour. She is in splendid condition. Apply to R. B., 15 Cross St., West-erly, R. I.

FOR SALE.—Well-known steel motor yacht, 110 ft.; built 1912; Sterling motors; 6 staterooms, dining saloon and social hall on deck, owner requires larger boat. Blue prints and full particulars. Whittelsey & Whittelsey, 11 Broadway. Phone Rector 4718.

FOR SALE.—21-ft. launch, 6 h. p. 2-cyl. Gray motor; speed 12 miles. Automobile top and cushions. Write for price and description. Milton J. Gold, 722 8th St., Brookings, S. D.

SECOND-HAND Jager motor, 18 H. P., 4 cycle, just overhauled and guaranteed in good order. Address W. H. Moreton, 218 State St., Boston.

FOR SALE.—One 22-h. p. Smalley motor with reverse gear, one 16-20, 4-cylinder Harvard motor with reverse gear, in perfect condition. Two 2-cylinder 6-h.p. Kennebec motors with complete equipment, in good condition. The Edwin E. Pinson Co., Bath, Maine.



Bridge deck cruiser, 37 ft. 5 in. by 9 ft. 1 in.; 24 H. P. Lamb motor. Boat less than two years old, and cost new over \$4,000. For quick sale will sacrifice for \$2,000. For particulars address Sacrifice, care of Motor Boating.



17 ft. stepless Hydroplane, 25 to 27 mile speed; 25 H.P. three cylinder Pierce Budd engine, Bosch magneto; hull best oak and cypress construction; mahogany decks and finish; self aligning bronze strut and bearings; brass screw fastened throughout; used only half dozen times; price \$700 cash. Can be seen at Evanston Yacht Club, Chicago. Address Stewart, 16 Balmoral Place, Winnipeg, Canada.

**ATTENTION!**  
 FISHERMEN, OYSTERMEN, HEAVY WORK BOAT OWNERS AND OTHERS. HERE ARE SOME WONDERFUL BARGAINS IN HEAVY DUTY, HIGH POWERED, 4-CYCLE ENGINES.

- LOOK!
- 300 H. P. Standard, 6 cylinder, 12 x 14, shaft, propeller, air starting and reversing, \$3,000.
  - 130 H. P. Jager, 1910, 6 cylinder, 4 cycle, type N, 400 R. P. M., 8¼ x 12, new, with full outfit, 20 ft. propeller shaft and propeller, \$7,200 pounds, \$2,500.
  - 120 H. P. Twentieth Century, 6 cylinder, 4 cycle, 9 x 10, with reverse gear, magneto, carburetor, coil, propeller, 1907 model, rebuilt and like new, \$2,800.
  - 75 H. P. Twentieth Century, 4 cylinder, 4 cycle, 9 x 10, reverse gear, magneto, propeller and coil, \$1,500.
  - 60 H. P. Sterling, heavy duty, 6½ x 8, 6 cylinder, 1910, Bosch magnetic make and break, with magneto, also jump spark ignition for starting, coil, propeller, stuffing-box, stern bearing, reverse gear, \$1,500.
  - 50 H. P. Globe, 4 cylinder, 4 cycle, 8¼ x 10, with reverse gear and outfit less shaft, stuffing-box and stern bearing, \$1,200.
  - 45-75 H. P. Sterling, 6 cylinder, 5¼ x 6, 1912, just like new, reverse gear, Bosch magneto, propeller, carburetor, etc., medium duty, \$1,200.
  - 37½ H. P. Automatic, 3 cylinder, 4 cycle, 7½ x 9, 1911, carburetor, coil, magneto, shaft, propeller, muffler, reverse gear, \$850.
  - 36 H. P. Buffalo, 4 cylinder, 4 cycle, 7 x 9, 1911, reverse gear, coil, carburetor, shaft, propeller, stuffing-box, \$950.

We also have a high speed 175 H. P. Brownell, 8 cylinder, 4 cycle, in A1 condition with carburetor, magneto, reverse gear, coil, etc., 6¼ x 6, \$1000.  
 If you see the engine you want, wire us to hold it for you and send deposit at once. Remember these machines are thoroughly overhauled and guaranteed. You take no risk.

BRUNS KIMBALL & CO., INC.,  
 132 Liberty Street, New York City.

FOR SALE.—Champion speed boat "Haida Papoose II," 20-foot Smith-Ryan hydroplane; 150 h. p.; eight-cylinder Sterling; built summer 1913. Winner of Free-for-all, Kansas City; Perry Centennial Free-for-all, Buffalo; Blackton trophy, Buffalo; Perry Centennial Free-for-all, Louisville. Second in Chamber of Commerce cup, Buffalo; Speed trial cup, Buffalo; Thomas trophy, Buffalo. First or second in every race started. Beaten every boat in races to which she raced second in speed trials. Has made better than fifty miles an hour in official speed trials. Inquire of Max C. Fleischmann, No. 419 Plum St., Cincinnati, Ohio, or Smith-Ryan Boat & Engine Company, Algonac, Michigan.

FOR SALE.—At reasonable prices, a few rebuilt Ferro engines. Write for particulars, stating size interested in. Ferro Machine & Foundry Co., 36 Hubbard Ave., Cleveland, Ohio.

CYLINDERS REBORED.—Pistons and rings fitted, new cranks, connecting rods, cases, transmissions, any part for automobile or motor boat motor reproduced like original. The shop of quality. McCadden Machine Works, Minneapolis, Minn.

WANTED.—A Matthews launch hull, between 30 and 32 ft. length, 6½ or 7½ ft. beam. Must be A1 condition, with or without equipment. Address Wm. M. Pagel, 295 Chestnut St., Detroit, Mich.

EXCEPTIONAL: Six cylinder 50-60 H. P. Speedway motor, complete with reverse gear, two propellers, gasoline tank, whistle outfit, etc. Very little used; nearly new. \$300.00 cash, balance on convenient terms. Inspection by appointment. F. A. Carmelia, Ellis Island, No. 3, N. Y.

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Successor to EDWARD BURGESS  
**NAVAL ARCHITECT AND YACHT BROKER**  
Mason Building, 70 Kilby St., Boston, Mass.  
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**YACHT BROKERAGE DEPARTMENT:**  
Commission on Sales, 5 per Cent. Commission on Charters,  
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MURPHY, KIRKALL & COMPANY, INC., 125 Liberty Street,  
New York City, will make you a most liberal allowance on  
your present engine in exchange for a new one. Let us  
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OVER 2,500 YACHTS AND LAUNCHES FOR SALE

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"Piute III." Type "Hand-V-Bottom" 24-  
Footer for Rough Water Use. Speed 20  
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I SUPPLY the highest grade of gen-  
uine complete Hand-V-Bottom boats  
which are built, engined and tested  
under my personal supervision.

Write for Quotations

Amateurs have built hundreds of suc-  
cessful Hand-V-Bottoms. One of these  
is "Old Glory II." You can build one if  
you work from genuine plans.

Send stamp for 1914 illustrated catalog  
showing successful stock designs

**WILLIAM H. HAND, JR.**  
Naval Architect

NEW BEDFORD, MASS.

U. S. A.

## How I Built Q & A.

(Continued from page 16)

evenings, Sundays and holidays and then most  
of the time alone, as the mosquitoes would  
soon drive away any friends who tried to help  
us. Down at Panama they boast that the rail-  
road across the Isthmus was built at the ex-  
pense of one Chinaman for every spike, but  
I can safely state that Q & A was built at the  
expense of ten Jersey pests for every nail and  
screw in her.

She is twenty feet o. a. with a beam of  
four feet eight inches and an extreme draft  
of about two feet. The keel is a fine piece  
of Eastern oak four by five inches and the  
frames are of the same material one inch by  
seven-eighths spaced eight-inch centers. The  
planking is five-eighth cypress of two and one-  
half and three-inch stock. All fastenings are  
either copper or brass, no other metal being  
used. The garboards are screwed on, each one  
having eighty-seven screws holding it to the  
frames. Each plank has one butt which is  
centered between the ribs and is secured by a  
block reaching from rib to rib half-inch wider  
than the plank and fastened with ten screws.  
The hidden ends of the planking are secured  
with screws, while copper boat nails are used  
in fastening them to the ribs, countersinking  
the heads and clinching the points. She is  
decked over five feet forward and three feet  
aft with one and one-half by half-inch oak  
which is held in place by screws.

After the planking and decking were all in  
place I concluded that it would be much more  
satisfactory to have the caulking done by a  
professional, as this is really the one part  
of the construction of a boat which an ama-  
teur is apt to fall down on. In doing so I  
secured the services of a caulker for ten dol-  
lars by supplying the cotton, paint, and seam  
brushes myself and I think the money was  
well spent, as she has never leaked a drop, not  
even on the day she was launched. Then  
again, I had the satisfaction of having the  
candid opinion of a man better able to judge  
the fastening of a boat than most others be-  
cause he had been all over her with his caulking  
iron and could tell in a moment just where  
the weak spots were, and I may add, he  
promptly stated that she was the best fastened  
job he had been on in a long time. In four  
hours, with the help of another man, he  
caulked bottom, top, sides, and decks, using  
lamp wicking, which I consider superior to the  
spun cotton, as it packs better and does not  
spew. After caulking, the hull was given a  
good coat of red lead inside and out and the  
seams filled with putty composed of red and  
white lead, adding enough whiting to make it  
the consistency of ordinary putty. The deck  
seams were filled with elastic-seam putty and  
the whole boat scraped and rubbed down as  
smooth as possible, using first a cabinet  
scraper, then two different sizes of sandpaper.  
This left a good clean surface to paint and  
varnish on. The sides were given three coats  
of light green and the bottom two coats of  
bronze anti-fouling paint. The decks, cover-  
ing boards, coaming and seats were stained  
old English oak and three coats of spar var-  
nish applied and rubbed down.

In fitting up the interior I resolved to try  
to arrange everything so it would be possible  
for two or three to sleep aboard, and to gain  
more space set the engine as far aft as pos-  
sible. The seats were also run fore and aft  
from the forward end of the coaming to  
within a foot of the engine. They are six-  
teen inches wide with the tops in three sec-  
tions fitted with hinges, giving plenty of locker  
room. The center flooring board is removable  
and by setting two cross pieces, which fit in  
cleats on each side of the seats, and the floor  
board on top of them, it makes a bed for three.  
The cushions are double; that is, they are  
twice the width of the seats, having a seam  
in the middle and by unfolding they will make  
a mattress the width of the boat. They are  
made of eight-ounce khaki filled with kopak.

A fifteen-gallon fuel tank is located under  
the forward deck with the piping led to the  
engine along the outboard side of the seats

(Continued on page 64)

## NAVAL ARCHITECTS & YACHT BROKERS



**Our 22x6 Stock  
Cabin Hulls**  
The most roomy and  
handsomest built.  
**A. W. HURD,** West Lynn,  
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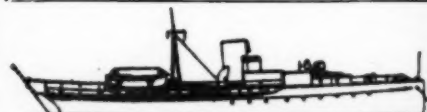
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Houseboats With or Without Power.  
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Specialist in the Design of Motor Cruisers,  
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mendation of your requirements

## WHITTELSEY AND WHITTELSEY

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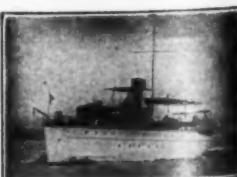




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## Finished 1-2-3

*Some finish, that!*

In the great Free-For-All Hydroplane Race at Toledo, July 29th, the three winners in their order,—Kitty Hawk V, Kitty Hawk Jr., and the Peter Pan V, were all Valsparred boats. This is not so remarkable a coincidence as it might seem, for nearly every other entry was Valsparred. But it speaks volumes for "the varnish that won't turn white" when the fastest boats of their class select Valspar as the best varnish they can use. In this race the Kitty Hawk V showed a better speed than 47 miles an hour.

Some durable varnish to stand that,—eh!

And on August 1st, the Speejacks,

the fastest gasoline cruiser in the world, won a 32-mile race with the Shadow, at Put-in-Bay, with an average speed of over 29 miles an hour for the course.

And the Speejacks is a Valsparred boat.

Notice the winners all over the country,—you'll be surprised to find how many of them use Valspar.

These men test everything that goes on their boats,—insist on having the best,—get the idea?

When your boat is overhauled this winter, have her varnished from stem to stern inside and out, with three good heavy coats of Valspar.

Write for nearest dealer's name, instructive book on how to varnish boats, and free two-ounce sample can.

**VALENTINE & COMPANY, 456 Fourth Avenue, New York**  
 NEW YORK CHICAGO BOSTON (Established 1832) TORONTO PARIS AMSTERDAM

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*The Purpose For Which  
the Various Grades  
Are Intended*

For Deck and Hull Seams of Yachts and  
Motor Boats,

—USE—

No. 1, Extra Quality

Black, white, yellow or mahogany color. Give  
black the preference; it is more elastic and satis-  
factory in every way.

Specified by all first-class designers, and used ex-  
clusively by all the prominent builders.

FOR SHIP'S DECKS USE

No. 2, First Quality Ship Glue

No. 3, Special Navy Glue  
For Waterproofing Canvas, for Covering  
Decks, Tops of Cabins, Canvas  
Boats, Canoes and  
Flying Boats

—USE—

No. 7, Soft Quality

Black, white or yellow. It not only water-proofs  
and preserves the canvas, but attaches it to the  
wood, and with a coat of paint once a year will  
last as long as the boat.

Waterproof Liquid Glue

Is Used for the Same Purposes as No. 7  
Soft Quality

Also in Combination with Calico Be-  
tween Double Planking of Diag-  
onally Built Boats

It is ready for use, requires no heating; simply  
open the can and paint it on, like ready-mixed  
paint.

This glue will also attach cork, felt, rubber, leather  
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Black, white and yellow

Our 25c. emergency cans made a big hit. Every  
canoeist should carry one; it is as valuable to him  
as a repair kit to a bicyclist or automobilist.

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will be found equally as ready for use in ten years  
as today.

It is a Johnnie-on-the-spot article that no boat-  
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30 cents in stamps.

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in Stock**

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**New York Gear Works**  
56 Greenpoint Ave., Brooklyn, N.Y.

Patented  
Sept. 2, 1907  
Jan. 15, 1908



## Flying in a Flying Boat.

(Continued from page 5)

thirty-five miles per hour is attained, she skims  
lightly on the surface of the water, the small floats  
at the ends of the wings maintaining the balance until  
the speed is sufficient to cause the ailerons to become  
effective.

When the machine has acquired the requisite speed,  
it leaves the water in a manner exactly similar to an  
aeroplane operated from the land, and as the friction  
with the water is removed the speed is immediately  
increased.

In landing, it is suggested that the boat should be  
kept as nearly level fore and aft as possible; and, in  
fact, if the water is unusually rough, it may be advis-  
able to allow the tail to settle first in order to prevent  
the possibility of the front of the boat sticking into  
an unexpected wave.

An interesting feature, which at the same time adds  
to the safety of the Curtiss boat, is that all control is  
duplicated. There are two steering wheels, either of  
which, when turned on its own center, serves to  
direct the craft to right or left. To attain a greater  
altitude or to descend, all that is necessary is to raise  
or depress either wheel on its swiveled post.

Other aerial controls are actuated by shaped shoulder  
pieces against which the operators lean when seated  
and the speed of the eight-cylinder engine, which has  
a bore and stroke of 4 x 5 inches, is controlled by a  
foot throttle.

Unlike many aeroplanes of ordinary type in which  
the motor is started by turning the propeller blades  
by hand (a method which has been responsible for  
more than one accident), the Curtiss engine is started  
by a quarter turn of a crank of orthodox type which  
projects through the Arco radiator in a position con-  
venient to the pilot's hand when standing up. This  
method not only eliminates any risk, but precludes  
the possibility of the boat getting adrift or out of  
hand before the passengers are safely seated.

A Schebler carburetor is fitted, ignition is taken  
care of by a Bosch magneto and cooling water is  
circulated by an engine-driven pump.

## Diesel Powered Motor Yachts.

(Continued from page 13)

room, and one in the bilge of the compartment forward  
of the engine-room. With this supply a distance of  
1,000 miles could be covered at full speed, or 1,500  
with one motor running. It is calculated that when  
the engine has been running in the vessel for a while  
a speed of 13 knots will be attained with both engines,  
or 10 knots with one engine.

Another vessel which should be of special interest  
to the yachting world is the *Idealia*, recently designed  
and constructed by the Electric Launch Company in  
Bayonne, New Jersey. The *Idealia* enjoys the distinc-  
tion of being the first yacht built in America to be  
equipped with engines working on the Diesel principle.

The *Idealia*'s principal dimensions are: Length, 84  
feet; beam, 14 feet; mean draft, 4 feet. A recent  
test showed her metacentric height to be 2 feet, which  
is considered very satisfactory, as it combines ample  
stability with seagoing qualities.

A comfortable crew space is located in the fore-  
castle. Aft of this is the dining saloon, with ample  
seating quarters for a party of eight. The galley is  
located abaft the dining saloon and extends the full  
beam of the ship and is well equipped, having a large  
coal range, ice box lockers, hot water boiler, porcelain  
sink, and all the modern conveniences. The engine  
room occupies a comparatively small portion of the  
length of the vessel and is located immediately abaft  
the galley, being entirely separate therefrom by means  
of a watertight bulkhead. In addition to the main  
engine, which is a 150 h.p. reversible American-Nurem-  
berg heavy oil Diesel motor, the engine-room contains  
a 10 h.p. auxiliary engine, direct connected to a 5-  
k.w. generator and an auxiliary air compressor. Tanks  
for the storage of fuel oil and lubricating oil are built  
in the sides of the engine-room. Thus the entire  
motive power is contained in a comparatively small  
space and yet leaves ample room for the crew and  
operation of the machinery.

In general arrangement, design and equipment the  
*Idealia* embodies the very latest approved ideas and  
presents a most pleasing and trim appearance.

The *Idealia*'s engine is of the Nuremberg type and  
consists of six cylinders, and one two stage air com-  
pressor. It works on the two-cycle principle, and,  
therefore, has an even turning moment and does not  
require the use of a fly-wheel. A very efficient pat-  
ented system of reversing is provided, whereby through  
the operation of a single lever the engine may be  
started, stopped and reversed with greater ease and  
quickness than is usually found in a steam engine of  
the same power. The starting and reversing is ac-  
complished by means of compressed air contained in  
steel flasks. With the supply of air carried the en-  
gine has been reversed over forty times in quick  
succession. In addition to the store of compressed air  
an auxiliary air compressor is provided, independently  
driven by a 10 h.p. oil engine, which may be started  
by hand, so that all danger of being unable to start  
the engine due to lack of compressed air is practically  
eliminated. The Diesel principle is now probably well  
understood by nearly every one interested in power  
yachts. For the benefit, however, of those who have  
not had occasion to look into the question it may be  
stated briefly that the Diesel principle is something  
quite distinct from the Otto principle, which is com-  
monly used in gasoline engines. In the Diesel engine  
pure air alone is drawn into the working cylinders and  
is compressed to about 500 pounds per square inch.  
Such a high degree of compression raises the tempera-  
ture to a point which ignites oil sprayed in at the end  
of the compression stroke. The oil then burns, main-  
taining the pressure about constant during the first  
portion of the stroke, after which it expands, continu-  
ing to do work. As a result of this system low grades  
of oil may be efficiently used and the thermal economy  
is very high.

The *Idealia*'s engine develops 150 h.p. at 550 revo-  
lutions per minute. The fuel consumption is one-half  
pound per horsepower hour. The fuel oil costs from  
3 to 5 cents per gallon, depending upon the grade  
and the place where it is purchased. A gasoline engine  
of corresponding power will use approximately one  
pint of gasoline per horsepower hour, the present  
price of gasoline being about 18 cents per gallon. At  
full power the *Idealia* makes about 14 miles per hour,  
and with 450 gallons of fuel has a cruising radius of  
630 miles.

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This last season has seen an appalling num-  
ber of accidents on the water—most of them  
due to carelessness in rowboats and canoes.

## Kenyon Pillows

in these boats would have saved every life.  
"Safety at any cost" sounds like a ridiculous  
slogan when you consider the cost of a  
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delphia, Pa.; Unger & Mahon, 110 East York St.,  
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Wait & Co., 1206 Michigan Ave., Chicago, Ill.; H.  
Lippert, 2610 N. Eleventh St., St. Louis, Mo.;  
Marine Engine & Supply Co., 121 E. Sixth St., Los  
Angeles, Cal.; J. C. Shadegg Engine Co., 215 Third  
St. South, Minneapolis, Minn. Handled in Canada  
by the Canadian Fairbanks-Morse Co., Ltd.

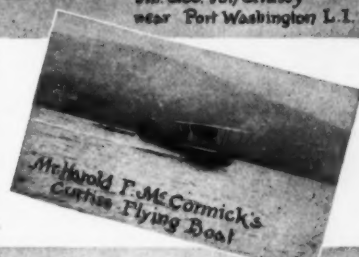
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lon. 3/4 to 1 1/2 the expense of  
power from steam or oil. We build  
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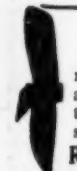
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Unlike a screw entering wood, a propeller, rotating in water, behind a boat, doesn't advance according to pitch, but slips; so thereby throws a stream of water astern by so much as the slip.

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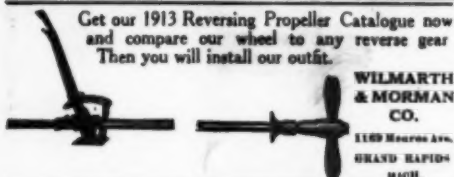
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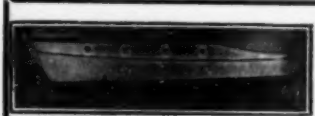
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30'-6" x 8' V Stern

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### Consult Us Before Placing Your Order

Complete estimates and plans will be gladly furnished on cruising and commercial craft from 16 to 200' in length. 25 stock designs ranging from 12 to 40', complete line of rowboats, canoes and yacht tenders.

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**NARRAGANSETT CHEMICAL CO.**  
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### Channel Marks and Danger Signals.

(Continued from page 11)

eight gas buoys numbered consecutively and marking its entire length. The odd numbered buoys carry eclipsing white lights and the others red ones, so that the channel is quite as well marked in the darkness as by daylight, and the pale color and eclipsing character of the red lights serve to prevent the navigator from confusing them with the port running light of a steamer. There is no other channel so marked in any of the waters of the United States.

A red and black horizontal striped buoy, generally a spar, is used to mark an obstruction in a channel or fairway, such as a spit rock or small shoal, which may be passed on either side. Associated with such buoys is generally a bell buoy, also to warn vessels away from the danger at night. While a shoal marked in this way may be passed on either hand, it is always wise to remember that the buoys are riding to a considerable scope of chain which allows them to cruise about to some extent, and accordingly the danger should be given a fairly wide berth.

The principal difficulty experienced in running buoyed channels is negotiating the turns, and chiefly in recognizing the line of buoys that is to be run next. On the chart everything looks simple enough, but when the buoys are seen stretching away into perspective it is quite another matter and the appearances are often very deceptive. At turns in a channel, and at points where two or more fairways meet or cross, it is customary to plant a special buoy carrying a spindle, cage or some other mark to distinguish it from the others, although in many instances this mark is attached to one of the regular channel buoys, or to some buoy that is common to two or more of the intersecting fairways. Cases of this kind are particularly perplexing, and the only rule of anything like general application that can be given is: Be governed in passing by the color of the buoy carrying the distinguishing mark. That is, leave a red buoy to starboard and a black one to port if entering any of the channels from the seaward, and, of course, the reverse if going out. In making these turns and crossings more vessels have gotten into trouble by putting the helm over too soon than from any other single cause. There is always more room on the other side of the buoy than you think, for perspective foreshortens everything you see ahead.

In about all of the more important harbors of this country where a considerable amount of towing is done, long lines of barges swept athwart the channels by the tide faster than the tow boat can haul them ahead have raised havoc among the aids to navigation for many years, the blight of the towing hawser fouling the buoys (and chiefly those marking turns), and dragging them—mushroom anchor and all—sufficiently far from their proper positions to make them a menace rather than a guide to safety. Replacing these buoys used to keep the light and buoy tenders busy all the time, and nobody ever knew when he was safe unless he could check up the buoys by ranges or bearings of fixed objects on shore. Now, however, all the important buoys are fitted with hook knives, sharp edges down, which automatically cut a fouling hawser before it has a chance to drag the buoy. Since these weapons for self-defense are rather conspicuous attachments to a buoy, it is important to recognize their function, and not to take them for distinguishing marks. A photograph of a nun buoy fitted in this way and also carrying a cage day-mark is given to show the difference in the appearance of each.

Wherever, as the case in most places that do a big shipping business, some particular ground is set aside for anchorages, the area is generally marked at each of its four corners by a white spar buoy, and wherever a white buoy is seen it will have this significance. Anchorages are also marked in harbors where the water is too deep for a vessel to use her own ground tackle by large, flat wooden buoys fitted with a heavy iron ring to which a ship may shackle her chain after it has been unbent from the anchor. Such moorings are to be found in many places on Puget Sound, where the water is very deep, and the buoys are maintained by the different cities and not by the Federal government, as is the case with the buoys that are used as aids to navigation.

The lights, light vessels, buoys and beacons of the United States are established and maintained by the Lighthouse Service of the Department of Commerce and Labor at Washington, and for administrative purposes the entire seacoast is divided up into lighthouse districts, each under the immediate supervision of an officer of the navy. At the headquarters of each district is stationed one or more buoy tenders and relief light vessels, together with a full supply of buoys of all descriptions, kept on hand to make replacements at short notice whenever needed. The tender for each district, to be recognized by her black hull and white superstructure, is constantly cruising over her station carrying supplies to the lighthouses and lightships, recharging the gas buoys and unwatched lights, leaving all the buoys in their proper positions, and replacing those which have to be taken up and painted or cleaned of barnacles. In this way the whole system of aids to navigation is carefully watched over and no one element of the entire outfit can be out of order or position very long before the trouble will be remedied.

### How I Built Q & A.

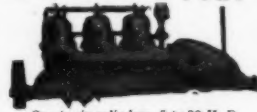
(Continued from page 60)

where it is in plain sight. A six-and-one-half-volt Edison storage battery supplies the whistle, searchlight, sidelights, stern light and a trouble lamp fitted with a long cord. The running lights can be immediately changed to burn oil as the electric sockets set on top of the oil burners, fastened there with clips.

Taking her all in all, I consider her a big boat for her inches and one which will take me to most any place I desire and bring me back again safely. She has given me many happy hours and I see no reason why I shouldn't enjoy many more and as the opportunity is still open to all my advice is "Get aboard, boys, and win a Q & A."

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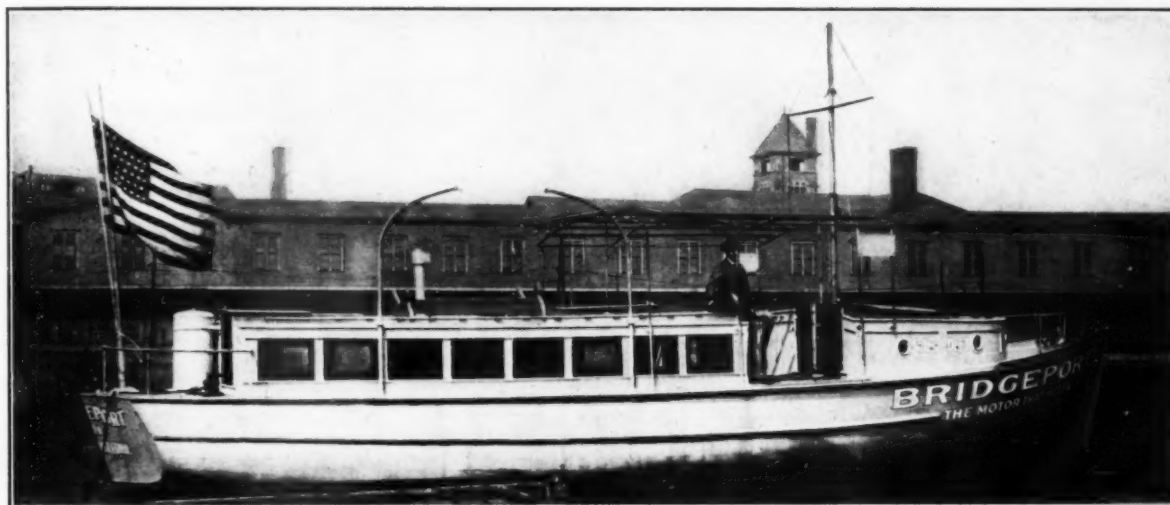
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## KEROSENE TYPE



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Length overall, 45', beam 12', draught 4'.

Power equipment, triple screws, demonstrating 3 sizes.

Center engine, main driver, three cylinder  $6\frac{1}{2} \times 7$ ..... 27 H.P.

Port engine, single cylinder  $5\frac{1}{2} \times 6$ ..... 7 "

Starboard engine, two cylinder  $4\frac{1}{2} \times 5$ ..... 8 "

Total horse-power ..... 42 "

Total number of days out from Bridgeport ..... 132

Total number of hours underway, all motors running ..... 399

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Cylinders open for removal of carbon ..... 1

Time operated before cleaning cylinders ..... 105 days

Carbon deposit very slight

Piston rings entirely free

Bearing troubles from heating—none

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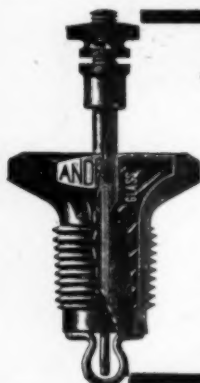
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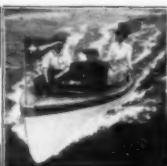


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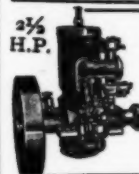
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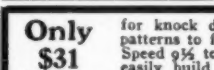
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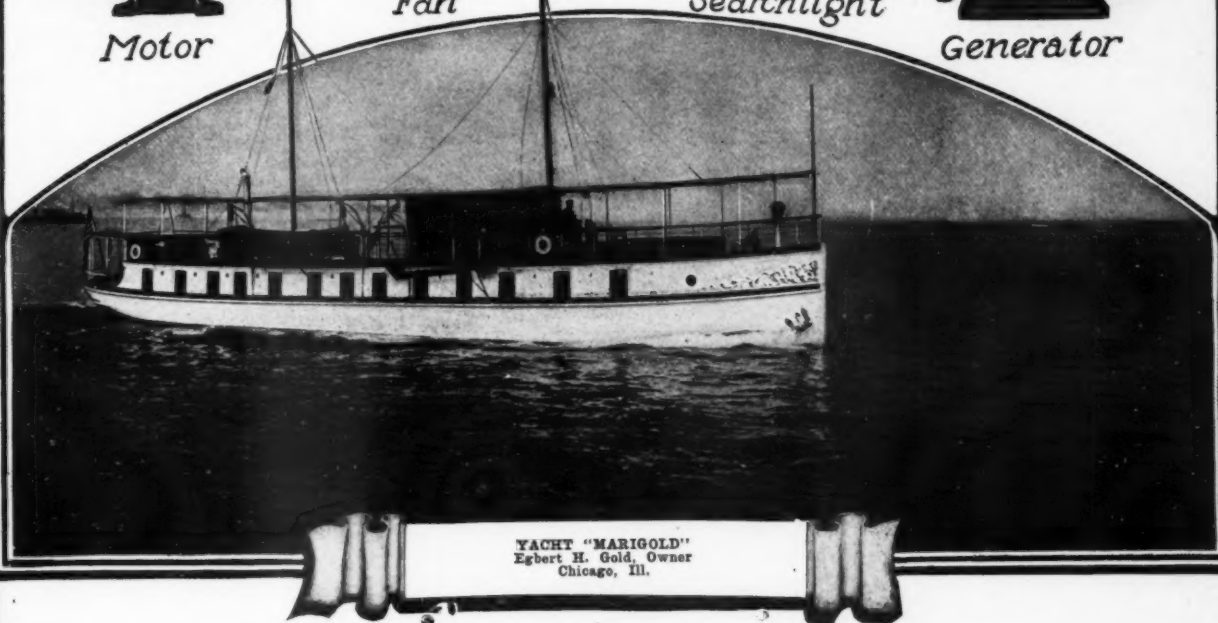
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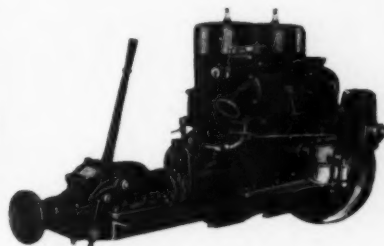
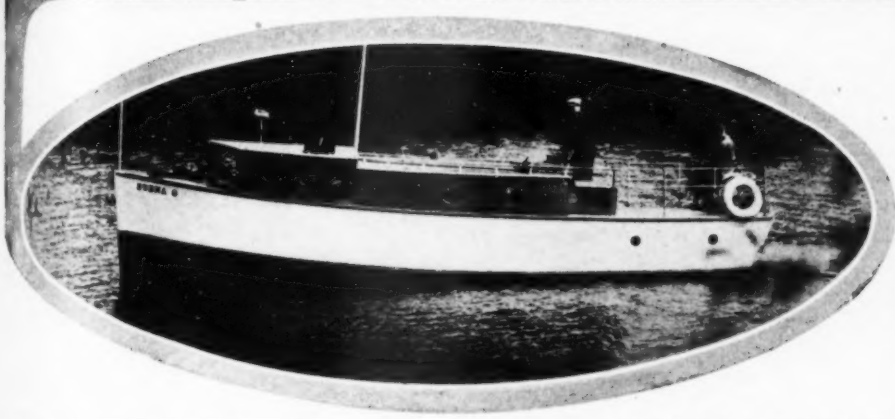
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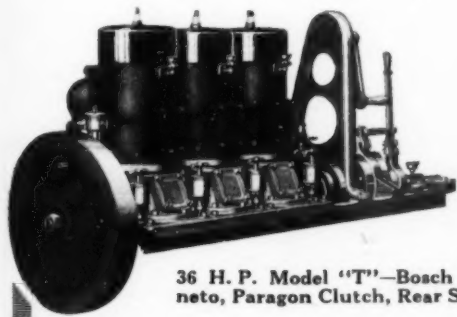


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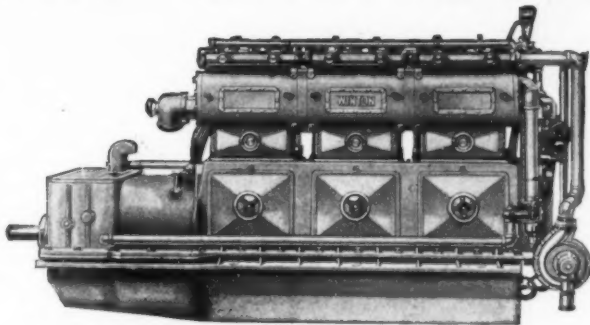
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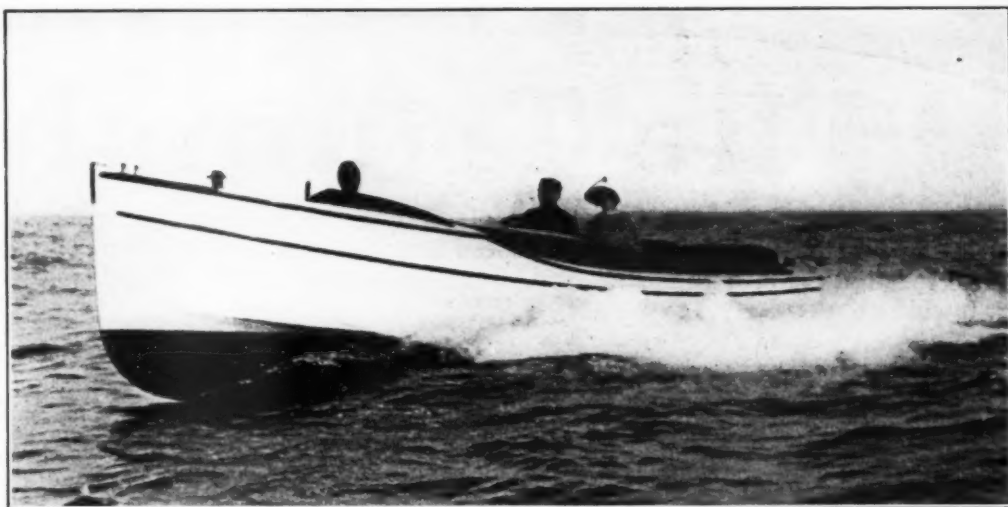
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# VAN BLERCK

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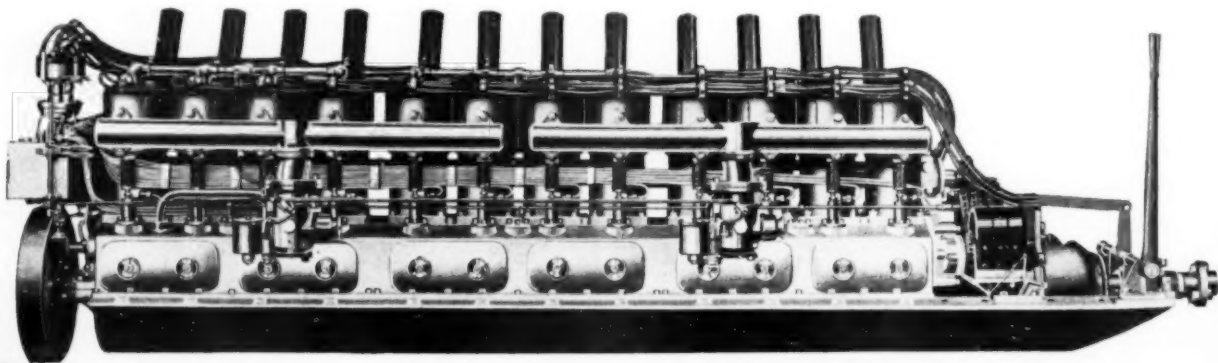
The one big, outstanding fact revealed by the 1913 racing season is the complete superiority of Van Blerck motors. At practically every meet where speed boats and speed enthusiasts gathered, Van Blerck motors were to be found in the favored boats. And, when the returns were in, Van Blerck powered boats were, as usual, found in the lead.

Starting early in the year, the Cloverleaf, with a 6-cylinder Van Blerck, won the Asiatic Championship at Manila. Then in July the Oregon Kid, with the same size of engine, at Astoria, captured the Pacific Coast speed boat championship from Johnny Wolf, who had held that title for four years. At Seattle, a little later, it clinched its title. In the meantime, the Jovial, with an 8-cylinder 150 H. P. Van Blerck, at Chambly, Can., on July 19th, easily established a new speed record for all speed boats in Canadian waters. July 4th and 5th, the Cinderella and Baby Ro—Van Blerck powered, of course—made a clean-up at Red Bank, N. J., while the A. F. B. was winning in southern Jersey.

Practically every important event at Toledo's great Perry Centennial was won by Van Blercks. The great free-for-all was handily won by Kitty Hawk V, the first ten miles of the thirty-mile course being covered at a world's record speed of 47.15 miles per hour, a record which stood unbeaten in American waters for the balance of the season. Kitty Hawk Jr., Van Blerck 6-cylinder, and Peter Pan V, Van Blerck 150 H. P., won second and third places, respectively. These three boats easily demonstrated their superiority over the other four entrants. During the same meet, Peter Pan V captured, for the second time, the International Trophy, while Cinderella, Van

Blerck 4-cylinder, easily took first place for open boats. It was a Van Blerck meet, Van Blerck powered boats carrying away 80 per cent. of the prize money.

The triumph of Van Blercks at Chicago was scarcely less complete. Disturber III, Van Blerck 600 H. P., won the famous Wrigley Cup and the championship of America. Oregon Kid won the 32 ft. championship and record for the fastest mile. Van Blerck powered boats predominated in numbers, being represented by Disturber III, Kitty Hawk V, Oregon Kid, Kitty Hawk Jr., Van Blerck, Hydro-Bullet and Barnacle. Then came Keokuk, August 26th and 29th, inclusive. The Oregon Kid won the Missouri River championship, the Van Blerck, Teaser and Hydro-Bullet, all Van Blerck powered, distinguishing themselves. Even at Buffalo Van Blercks led. In the first day's hydroplane races the Kitty Hawk V and Oregon Kid had distanced all competitors in the first 3/4 miles of the thirty-mile course. It was simply a walk-away for Van Blercks, but at the second turn these two leading boats got into a mix-up, and sank. With these two boats out of competition, the several events of the meet were won in the slowest time of the season. Out of twenty-six big races during the season, Van Blerck powered boats won 22 firsts, 3 seconds and 1 third.



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# MOTORS

## the Season of 1913

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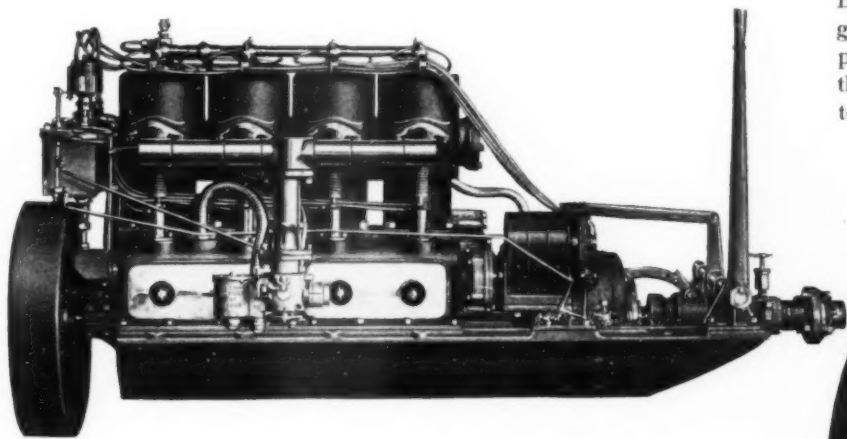
Van Blerck motors are all of one general design—for hydroplanes, speed boats, runabouts, cruisers and work boats. The very same qualities of power, speed and reliability that have made the Van Blerck engines the most successful speed motors built are found in an equal measure in our slower speed, medium-duty models. The fierce test of the 1913 racing season has proven to every motor-boat owner the fitness of Van Blerck engines for *every service* within the range of sizes built.

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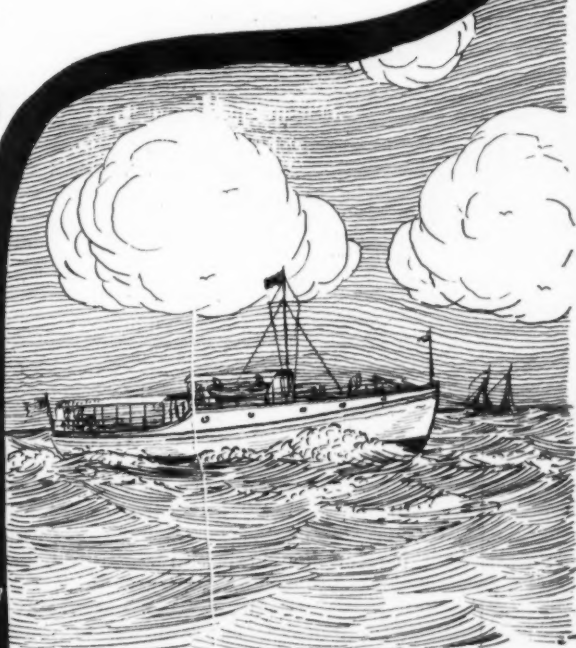
Mr. Van Blerck has put a little more power—a little more speed—a little more of that almost human response to the touch of the throttle—a little more reliability into his motors that will not be found in any other marine engine. He is THE MASTER MARINE ENGINE BUILDER of today—your ideal of a presiding genius over every individual manufacturing process from the receipt of the raw materials at the receiving door to the finishing touches on the testing block.



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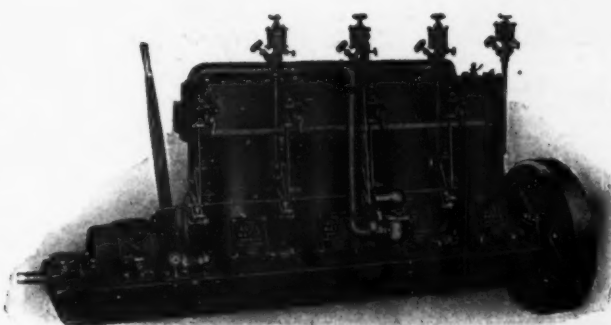
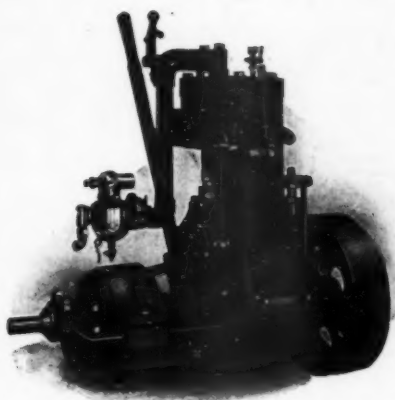
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**"The Automatic"** The ideal four-cycle engine for launch, cruiser or commercial boat. It is built in twenty sizes—from 3 to 250 H. P., with one to six cylinders. In design and construction it represents the best that can be produced—the best that money can buy.

The AUTOMATIC is actually made and assembled in our own plant. It has separate, independent cylinders; the crankshaft is not "drop-forged"—it is hammered out from a solid block of steel. The valves are large and may be removed without taking off the cylinder head. A powerful reverse gear is built on the engine bed. Multi-cylinder AUTOMATIC engines are regularly equipped with both make-and-break and jump-spark ignition, with geared high-tension magneto.

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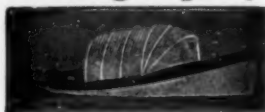
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able anyone to install it.

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Stands Rough Weather  
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# EDISON BSCCO

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### The Standard Closed Circuit Cell



EDISON-BSCO  
Type 206  
Cell 200  
Ampere-Hrs.  
Capacity

A large proportion of motor boatmen engaged in coastwise trade, fishing, etc., use Edison Sparking Outfits. From the standpoint of ignition efficiency this test is probably the most severe in power boating.

Two important reasons for the use of Edison Primary cells in this service are economy and dependability. Many of these boats make long trips out to sea and must have a reliable source of energy for ignition to insure their return. Dry cells are expensive on account of the rapidity with which they exhaust in heavy service, and in addition have an uncertain life. Mechanical devices with moving parts are apt to go wrong and have the boat stranded far from land.

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of Battery Energy**

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Complete Renewal

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### THE "WINNER" NEW

THE CLOSET YOU NEED AND WANT  
A High Grade Reliable Fixture at a Low Price



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**THE "WINNER" Pump Water Closet** for use above or below the water line, fitted with round Vitro-Adamant flushing rim hopper bowl. **Hardwood Seat** with nickel plated brass post hinges, with rubber protectors. **Two and one half (2 1-2) inch Combination Supply and Discharge Pump.** "Sands-Special" quick opening supply Valve.

**Plate S-2060 The "WINNER" Closet** as described with hardwood oak finished seat . . . . . **\$19.00**

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The "Winner" Closet is protected with "Sands" patent back water check valve which prevents flooding when installed below water line. The "Winner" Closet is fitted with inlet and outlet detachable couplings with union connections permitting easy installation.

**Measurements:** 16" over all in width, 17" front to back, height 13" to top of seat, 14" to top of seat cover.

**Weight:** Net 35 pounds. Approximate Shipping Weight, 50 pounds.

Large Assortment of Closets, Lavatories, Deck Plates, Ventilators, Portlights, Basin and Galley Pumps, shown in CATALOG "R," free upon application.

**A. B. Sands & Son Company**  
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**LARGEST MANUFACTURERS IN THE WORLD OF  
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***With every full page display advertisement in December Motor Boating we will give you, without extra charge, one-half page advertisement in our new complete Marine Trade Directory. Two pages used in December Motor Boating entitle you to a full page advertisement in the Directory.***

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The Annual Buyers' Reference and Export Number of Motor Boating, published December first, will be the most complete catalog of the whole marine trade ever printed. This issue will be preserved throughout the year by every buyer because it will describe and illustrate every stock boat, accessory, part, etc., on the market.

Every maker of any article that sells to the marine trade, whether he advertises regularly in Motor Boating or not, is warranted in using maximum space in December Motor Boating.

### **Motor Boating Trade Directory**

A complete up-to-date list of all manufacturers of boats, marine engines, parts, accessories, supplies and fittings, classified according to their products and giving full names and addresses. This valuable directory will be published as a separate volume and distributed to the entire trade in connection with the December number.

The Marine Trade Directory issued every year by Motor Boating is the only list of its kind published anywhere. It will have a purely trade circulation of 5,000 copies and will be kept by manufacturers, purchasing agents, etc., for reference at buying time. This book reaches big buyers at the psychological moment for maximum advertising value.

***Send Your Reservation Today. Mail Copy Soon As Possible***

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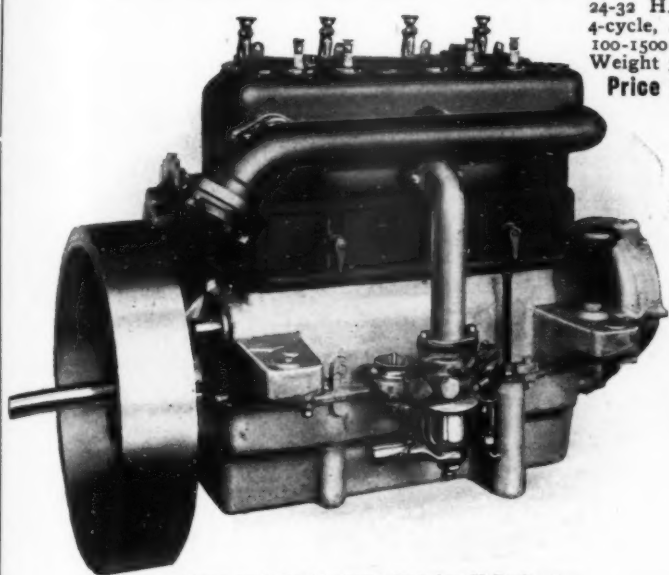
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NEW YORK

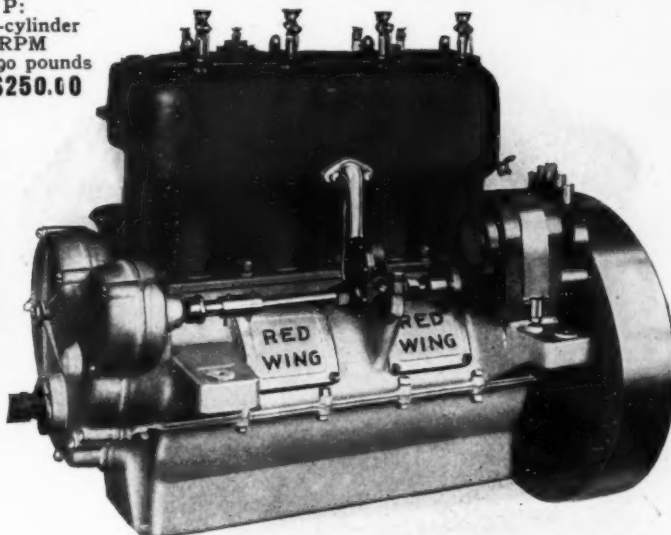


## At Last, the Perfect 4-Cycle Marine Motor "With Power to Spare" **RED WING THOROBRED**



Cams and shaft integral, Noiseless Helical gears

24-32 H. P.  
4-cycle, 4-cylinder  
100-1500 RPM  
Weight 390 pounds  
Price \$250.00



Model R. Schebler Carburetor, Aluminum Crank case

### Bound to be Marine Sensation of 1914

WE HAVE ACCOMPLISHED what others tried for—a perfect 4-cycle marine power plant with POWER TO SPARE, that will stand up under the severe strain of Extreme speed, or "stand and deliver" day in and day out in cruising service. And by manufacturing in enormous quantities for foreign, American and the Canadian trade, using specially built machinery and buying materials in immense lots we can produce and market this motor at a price that would bankrupt a smaller concern. But that's to your profit. We are content with a small margin of profit on each engine, confident that our total

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We want Good Agents in Every Section of the United States and Canada. Territory is going to Go Fast. Dealers, Builders and Agents Write IMMEDIATELY for our liberal Agency Proposition.

This is the Motor You Want for 1914. Get in touch with us NOW.

We also manufacture 2-cycle and 4-cycle motors in all sizes for every service, and build all sizes and styles of boats from our "Fisherman" to cruisers.

**RED WING MOTOR COMPANY**

Dept. B

**Red Wing, Minn.**

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**More Revolutions  
More Power Less Expense  
and Smoother Operation on Poor Fuel**

That's the whole story of the new Model "Y" Kingston Marine Carburetor. It's designed especially for the low grade gasoline now supplied and consequently gives better results than any ordinary carburetor.

Gasoline has been steadily going up in price and down in quality. Carburetors which were designed to vaporize gasoline of 72° Beaume are extremely unsatisfactory for fuel that tests 60° and below. They will make the motor run but that is about all. Satisfactory operation is entirely lost.

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To know how the Kingston will work on your engine—to know whether the results justify the change—we offer to take all the risk by granting 30 days' trial free. If you want maximum motor efficiency you can't refuse to accept this offer.

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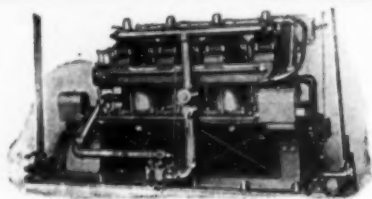
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Heavy Duty, Two Cycle, 5 to 20 H. P., \$110 to \$355.

KEROSENE ATTACHMENT tests show no more carbon than with Gasoline. Simple—Economical—Reliable. Attachment extra—Single cylinder, \$17. Double cylinder, \$25.

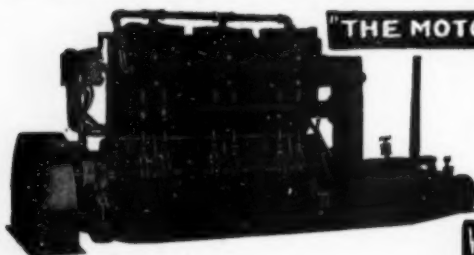
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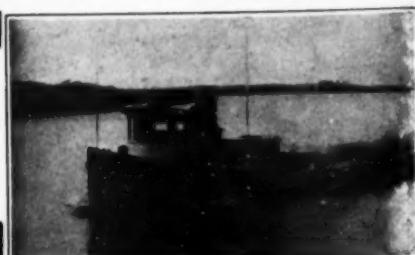


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**FOUR CYCLE WOLVERINE MARINE ENGINE**

They Use Kerosene, Gasoline, Alcohol, Distillate, Producer Gas.  
Have no equal for economy, durability, power, reliability and steady service.  
One to Three Cylinders. 5 to 100 H.P.  
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**HELP. I AM TIRED OF ROWING**  
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OILS and GREASES  
FISKE BROTHERS REFINING CO.  
Established 1879  
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"Make Motors Make Good"

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Waterproofed  
Solid braided cotton with center of phosphor bronze wire.  
Strong and durable, and will not stretch or rust. Send for sample.

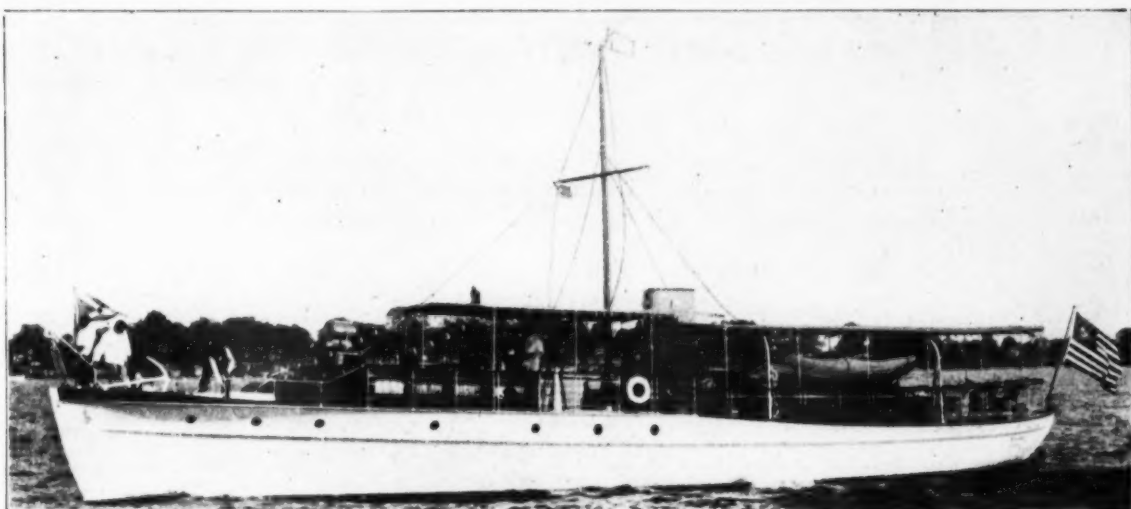
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## The Aaron Automatic Bilge Pump

is the only pump that is really automatic, and the only pump that does clean your boat of gasoline fumes, and thus preventing explosions and fires on your boat.

**AARON AUTOMATIC BILGE PUMP CO., INC.**  
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80 ft. x 14 ft. NIAGARA. Two 75 H. P. heavy-duty Sterling engines. Speed 15 miles. Owner, Com. C. W. Kotcher, of Detroit, Mich.

**PERFECTION**—A result of long experience in construction and a disposition to give the customer real service and the best of equipment. The following letter received from Com. C. W. Kotcher, of Detroit, Mich., tells the story of Matthews' Service.

THE MATTHEWS BOAT COMPANY,  
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Detroit, Mich.

Gentlemen—I have been using my 80 ft. gasoline cruiser NIAGARA almost constantly since you delivered her the latter part of July.

I have not had a moment's trouble of any kind, either with the power, electrical or any other equipment.

Having been in the woodworking business since I was a boy, I am in a position to say intelligently that this part of the ship is without fault. In addition to using my electrical pump for filling storage and gravity water tanks, I have arranged it to pump water for fire hose, washing decks, etc., a feature well worth while.

I consider the new boat a dream of perfection.

Yours very truly, (Signed) C. W. KOTCHER.

**THE MATTHEWS BOAT COMPANY, YACHTS OF QUALITY Port Clinton, O.**

**MATTHEWS**  
**CRAFT**

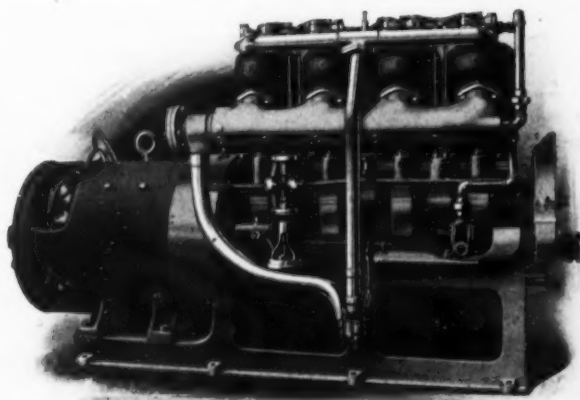


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These two new Erd Four-Cycle Models have sounded a new note in marine motor construction. They bear all the refinements of the most up-to-date high grade automobile engines, a type acknowledged to be vastly superior to the average marine engine of today. And we have followed automobile practice further by producing these motors in large quantities with special tools, jigs and automatic machinery, thus enabling us to sell a four-cycle engine with the highest quality of design, materials, workmanship and equipment, at prices heretofore unheard of.

Both models have four-cylinders cast en-bloc, 4" bore x 5" stroke, giving 25 H.P., enclosed valves, intake and exhaust manifold cast integral with cylinders, every moving part enclosed yet readily accessible because of easily detached covers.

### Here Are a Few of the Advanced Features:

Perfect control when running idle or with full load. No Vibration. Easy Starting. Every Bearing in Motor Absolutely Interchangeable. Positive oiling system. Bearings larger than those of any other motor of the same bore. All parts interchangeable. Motor handsomely finished.

Reverse Gear on extended base, making it a Unit POWER PLANT. Foundation lugs wide enough to allow fore and aft timbers to run past flywheel, thereby making it possible to install a foundation 50% stronger than the ordinary way. Every part of Motor Easily accessible.

The High Speed Motor is equipped with Aluminum crank-case, base, clutch cover, hand-hole plates and water cover. Especially adapted for hydroplanes or wherever motor is placed forward.

High Speed Type ERD FOUR CYCLE

### And Best of All— THE PRICES

Standard Type, \$385.00

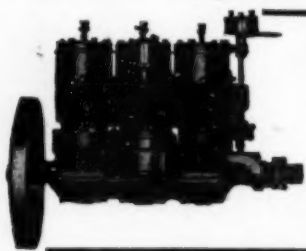
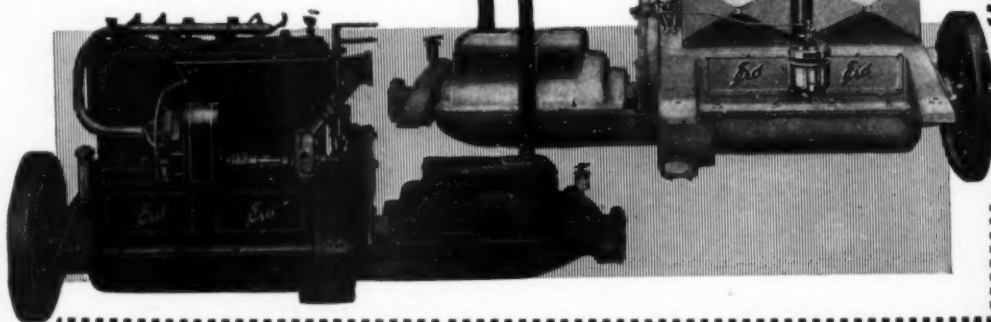
High Speed Type, 425.00

Write today, for further specifications

**ERD MOTOR CO.**

Saginaw, Mich., U.S.A.

Standard Type ERD FOUR CYCLE



## MORRISTOWN ENGINES

HIGH SPEED

::

FROM 2 TO 30 H. P.

LIGHT WEIGHT

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HIGH GRADE

Ask for Catalogue.

WE ALSO BUILD HIGH GRADE BOATS—LARGE OR SMALL.

**Morristown Boat & Engine Works**

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**MOTOR  
BOATING**

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# AT LAST THE ROTARY ENGINE HAS BEEN PERFECTED

ONE POUND IN WEIGHT PER H. P.

**N**O limit for speed (speed from 10 to 3000 R. P. M.)  
only one rotating part and two automatic valves —  
Nothing to get out of order — VIBRATIONLESS — No  
use for a fly wheel — No power is lost — No fuel can pass  
through without being utilized — NO DEAD CENTER  
— Simplicity in construction will make the selling price  
very low — Entirely fool proof and needs no attention after once starting — Self starting — Give it  
the fuel, that's all — Runs on one-half the fuel of any other engine — Made in all sizes.



25 H. P., 10" HIGH, 4½" THICK, WT., 25 LBS.

## THE ENGINE WITH A HUNDRED LESS PARTS

ADDRESS ALL COMMUNICATIONS TO

### FRANK J. HORTON

SOLE OWNER AND INVENTOR  
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FULL DESCRIPTION GLADLY FURNISHED. NO STOCK FOR SALE. WILL BE ABLE TO DELIVER THESE ENGINES SHORTLY

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## HOW MUCH WAS YOUR REPAIR BILL THIS SEASON?

### IF YOU HAVE A "FERRO" "YOU SHOULD WORRY" HERE ARE THE FIGURES

Forty thousand Ferro Engines, valued at \$6,000,000, in use; \$25,216.40 amount the Ferro Machine & Foundry Co. received for repair parts during the last twelve months. Let us divide \$25,216.40 by 40,000 and see what the average Ferro Engine cost its owner during the last year:

40,000 ) \$25,216.40000 ( \$0.63041

24,000.0  
1,216.40  
1,200.00  
16.4000  
16.0000  
.40000  
.40000

### 63 Cents—"Can You Beat It"?

When you stop to think—over 4,000 of these engines have been in use seven years—5,500 six years—6,000 five years, with corresponding ratio to present date.

### What Do These Figures Show?

Simply that a Ferro owner pays for his engine when he gets it. He does not pay a nominal figure at the time of purchase, then continue to contribute in way of repair bills as long as the engine is in operation.

### What Does This Prove?

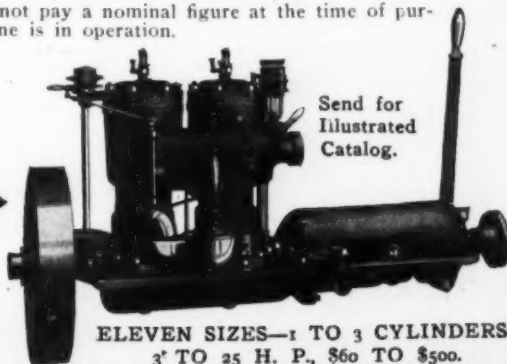
- 1—That quality is cheapest in the long run.
- 2—That it pays to consider first total cost and buy the best.
- 3—That Ferro Engine owners are not burdened with repair bills.
- 4—That you can depend upon your Ferro Engine to run and will not be tied up waiting for repairs.

### THIS IS ONE OF THE FERRO ENGINES—→

that has been run from one to seven years at an average repair expense of 63 cents per season.

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Sales and Service Stations in every boating center in the world.  
New York Distributor—The Gasoline Engine Equipment Co., 133 Liberty Street



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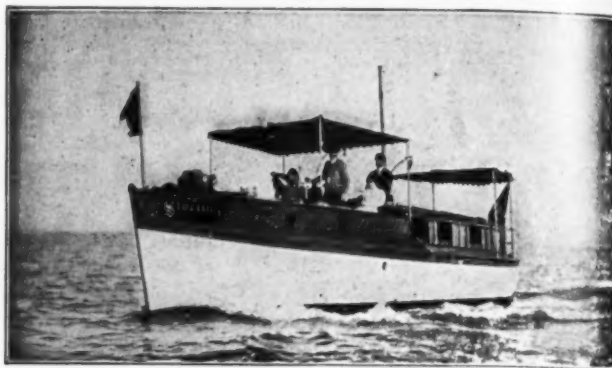
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The great number of satisfied owners of **RALACO Engines** is rapidly increasing, owing to the general satisfaction given by **ALL** of them.

High grade in the extreme, clean, cool, quiet and dependable. A fuel consumption of one-tenth of a gallon of gasoline per horse power hour.

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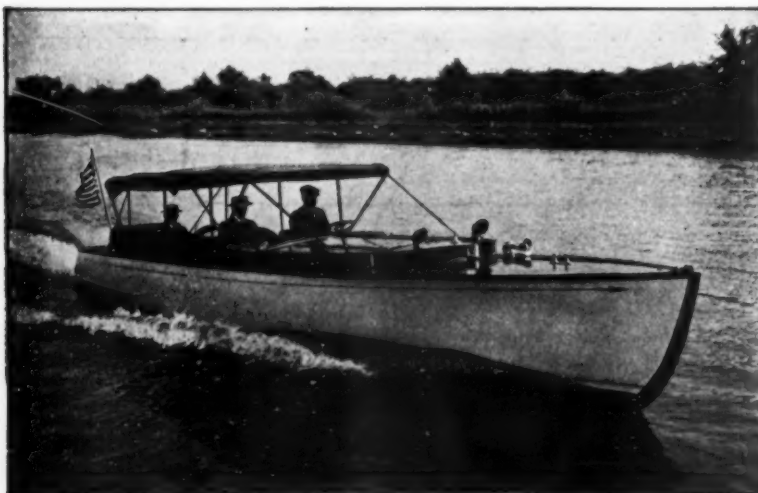
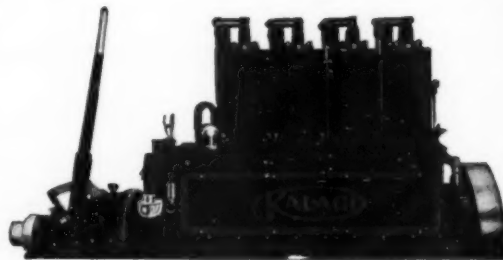
Main Office and Factory: 616 SEGUR AVE., TOLEDO, O.

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AGENTS:

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### NOTE THESE IMPROVEMENTS

No noise, no vibration, electric starters, electric lights, foot-pedal reverse control, plate-glass windshield, self-filling oiler, and many other little conveniences designed for your comfort, not found on the average boat.

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Send for Plans and Specifications

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offer the amateur builder an absolutely certain means of obtaining a high grade boat at reduced cost. Each part is guaranteed to fit.

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## The MIGHTY MERCURY Drove GUNFIRE Jr.

This is the Mighty Mercury 52 H.P. Special which drove the 20-ft. hydroplane Gunfire Jr., through its long list of records during 1912—one of the most successful racing seasons ever enjoyed by any boat or its owner. Ten firsts, one second, one fourth (broken propeller), and several records in hydroplane and displacement classes and free-for-all races.

The 52 H.P. Special has 5 1/4" bore, by 5" stroke. For power, flexibility, durability, smoothness and reliability, it is ideal for racers, cruisers and work boats.

Die cast bearings and every bearing surface is uniformly larger than the corresponding of any other motor. 2 1/2" valves, both inlet and exhaust. Capacious water jacket.

Reverse gear bed cast integral, with lower half of crank case. Paragon special reverse gear, with positive reverse lever lock, eliminating ringing and rattling noises.

Positive lubrication to every friction point. Becker imported Hollow steel wrist pins.

Write today for the Mercury Book.

Two New Models. 6 1/4-in. Bore x 7-in. Stroke.

4 Cylinder—125 Horsepower.

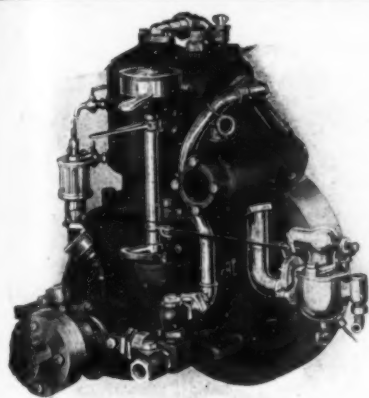
8 Cylinder—250 Horsepower.



**MERCURY MOTOR CO., Produce Exchange New York**

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3 H.P. Light Duty Engine.

At this writing about 50% of our output is that of engines equipped to burn kerosene. As large a percentage of those kerosene engines go into pleasure boats as into commercial boats. We have only been building kerosene engines nine months. Each week sees an increase in percentage of our kerosene engines over the gasoline engine. This increase in the sale of

## REGAL OIL ENGINES

has a cause. It lies fundamentally in the fact that our kerosene engines are a success. They burn the kerosene exactly as well and clean as does any engine, gasoline. They deliver as much power as the gasoline engine and consume no more fuel. Calculate the saving in your fuel bill if you used kerosene in your engine instead of gasoline, then write for a catalogue, describing our kerosene engine.

**REGAL GASOLINE ENGINE CO., 74 W. Pearl St., Coldwater, Mich.**

Winners  
**DREAM**

Wins Bermuda Race

FOR CRUISERS, SMALL YACHTS, PARTY BOATS, and for boats using propellers less than 30 inches diameter, we back the "COLUMBIAN" "Rocket" Propeller against the world. "COLUMBIAN" Wheels—styles G and H—together with the "COLUMBIAN" "Architects" Propeller, which has beaten everything else on hydroplanes, are the three MOST POWERFUL PROPELLERS made anywhere in the World to-day.

## COLUMBIAN PROPELLERS

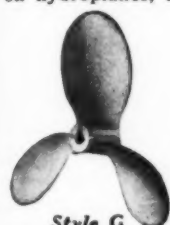
Winners  
**TOSCAM II**

Wins Return Race

FOR LARGE OYSTER DREDGES, FISHING BOATS, FERRY-BOATS, PASSENGER BOATS, YACHTS, we can furnish a "COLUMBIAN" Style "H" Propeller that will beat any other Propeller made.

**DON'T BUY until you read our booklet, "PROPELLERS IN A NUTSHELL"**

It also tells you about COLUMBIAN RUDDERS, Outboard Rudders, Speed Boat Rudders, Hydroplane Rudders, Launch Rudders, Universal Struts, Universal Stern Struts, Combination Outboard Rudders and Universal Stern Struts. Write.



Style G

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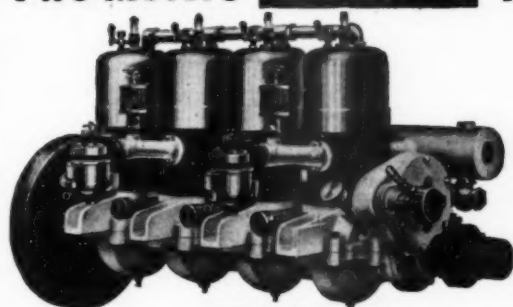
LONG ISLAND

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Style H

## Two Motors that have made The Waterman Reputation World-Famous



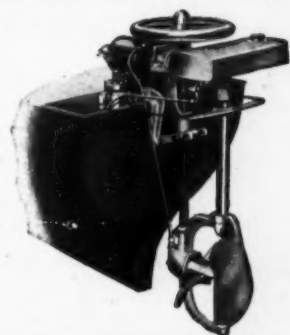
WATERMAN B-4  
4 Cylinder, 2 Cycle, 24 H.P.

Sturdy, dependable, powerful—Waterman Motors meet the severest tests whether of rough open sea or extended speed contest. For pleasure boats, rowboats, hydroplanes, work boats—there's a Waterman for every purpose. Every one is guaranteed for life—every one is light, robust, smooth-running.

### The Porto Makes the Rowboat a Pleasure Boat in 3 Minutes

This famous midjet gives TWO FULL H. P.—weighs but 56 lbs. complete, propeller, rudder and all. Bore, 2 3/4 ins.; stroke, 3 ins. Copper-jacketed; under-water exhaust; steers with tiller ropes. Drives an 18-ft. rowboat 7 miles per hour. 4 hours on a gallon of gasoline. Eighth year of success—it's the original.

Write for catalog, showing latest models. It's free—write today



**WATERMAN MARINE MOTOR CO., 201 Mt. Elliott Avenue, Detroit, Mich.**

Canadian Fairbanks-Morse Co. Ltd., Exclusive Distributors for Canada of Outboard and Model K Motors.

## HEAVY DUTY MARINE ENGINES

Installed in the Finest WORK and PLEASURE BOATS

Before purchasing an Engine  
SEND FOR CATALOG

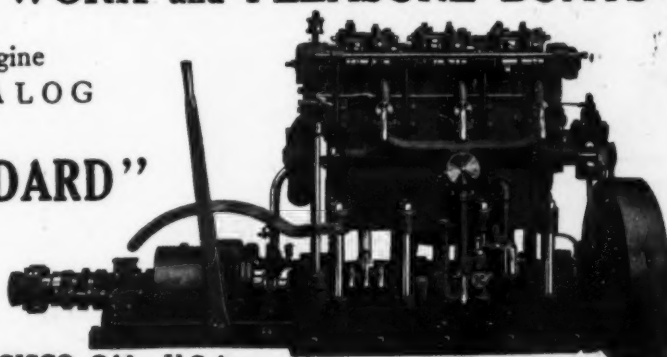
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## ORIGINAL "STANDARD"

Standard Gas Engine Co.

Incorporated June 4, 1901

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ALASKA-YUKON EXPOSITION

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IN A NEW TYPE FOR  
COMPACT  
AND NEAT  
ENCASED  
BUT ACCESSIBLE  
TELLS THE STORY



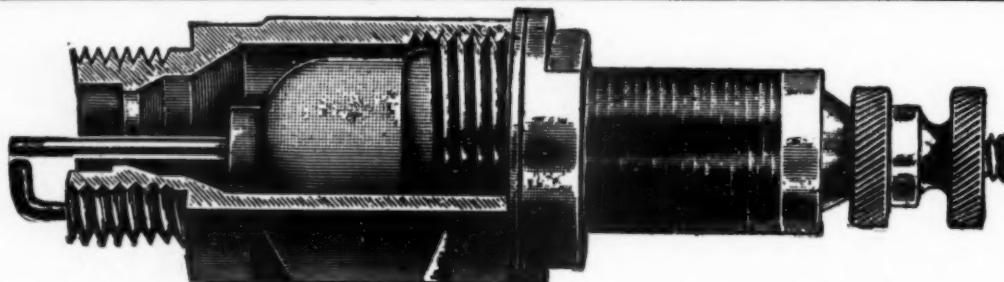
1913, FROM 1 TO 40 H. P.

SILENT AND  
POWERFUL  
JOHNSON AND  
QUALITY

Guaranteed for ONE YEAR

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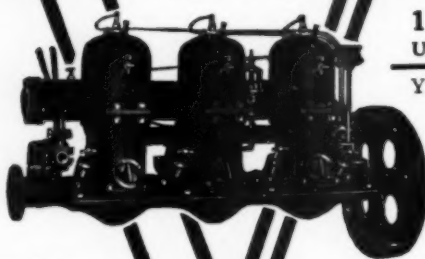
The Boat  
Builders'  
"Stand-By"  
—The Boat  
Owners' Pride

MOTORS

5 to 55 h. p. 3 KINDS—  
SPEED REGULAR HEAVY DUTY

Strong, neat, simple—absolutely dependable. Give honest, enduring service—constant satisfaction. Win your enthusiastic confidence. Easily accessible—crank case conveniently opened from either side. Non-backfiring. Double ignition. Easy starting fly-wheel. Connections for rear starter. Equipment includes Paragon reverse gears. Mea Magnetos, Noxon distributor, heavy brass fittings and many other exclusive features.

VIM MOTOR COMPANY



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1, 2, 3 and 4 CYLINDER  
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Your boat, equipped with a VIM, will make your day or evening on the water—with the pure air, refreshing breeze—the lure of the great outdoors—one of exhilarating enjoyment and healthful recreation. Thousands in use, many of them eight or nine years old. The old boatman picks the VIM. Read twenty-seven reasons why in our new book, "Boating Facts."

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We still have a little open territory where we can use a few more good agents. Write for proposition.

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ATTACHES  
to any row  
boat in one minute.  
Speed eight miles.

EVINRUDE  
DETACHABLE ROW BOAT MOTOR  
EVINRUDE MOTOR COMPANY  
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WEIGHS fifty  
pounds, carries  
like a suitcase.  
Catalog on request.

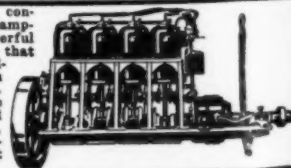


Backed by years of experience in building quality motors for those who buy critically, they are today the highest standard by which the finest motors are judged.  
"Buy a Campbell and keep going"

MARINE CAMPBELL MOTORS  
FOUR CYCLE

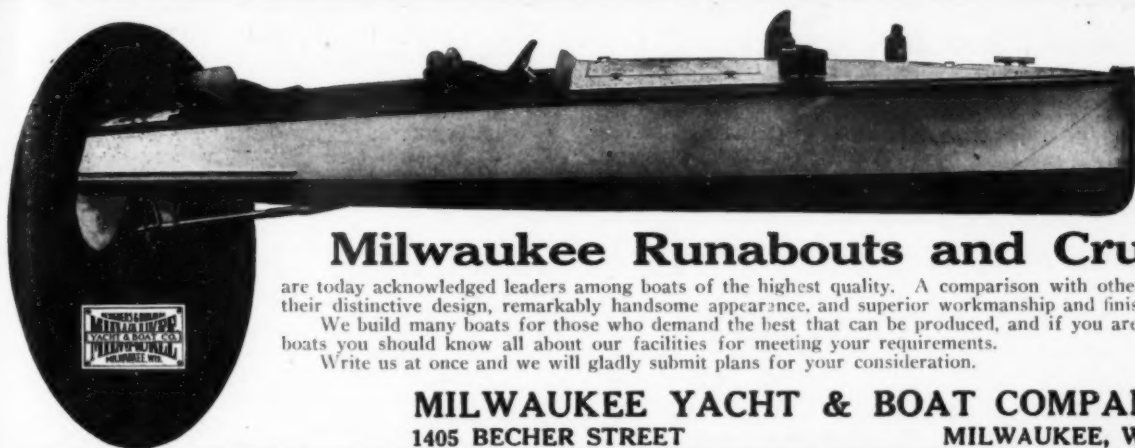
DESIGNED and BUILT for those who recognize and require QUALITY of the substantial kind that renders a motor capable of unfailing service year-in-year-out.  
A CAMPBELL FOR EVERY SERVICE—5 TO 100 HORSEPOWER.  
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The open base construction of the Campbell is a Wonderful Engineering Feat that places it far in advance of American or Foreign motors. It is clean, simple and handsome. All parts accessible, yet completely protected from grit and dust.



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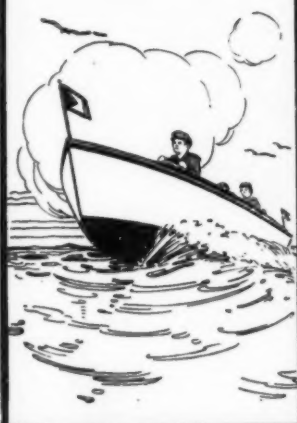
## Milwaukee Runabouts and Cruisers

are today acknowledged leaders among boats of the highest quality. A comparison with other fine boats reveals their distinctive design, remarkably handsome appearance, and superior workmanship and finish.

We build many boats for those who demand the best that can be produced, and if you are interested in good boats you should know all about our facilities for meeting your requirements.

Write us at once and we will gladly submit plans for your consideration.

**MILWAUKEE YACHT & BOAT COMPANY**  
1405 BECHER STREET MILWAUKEE, WIS.



## YOU SAVE THE DEALER'S PROFIT ON LA MOTORS

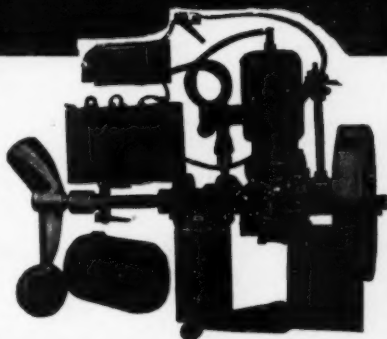
It won't cost you as much as you thought to enjoy the pleasure of motor boating this summer. The old, reliable, "keep-going" Lockwood-Ash motors are sold direct from factory to you at a big saving.

### No Dealer's Profits to Pay

**Immediate Delivery** Six models, all guaranteed for one year, and sold on 30 days' trial. No strings to this offer, no freight to pay. Just send for any of our complete outfits, and if it doesn't delight you send it back at our expense.

**The 1-2 H. P. Motor and Outfit Complete** shown in illustration. **Freight Paid, only \$36.25**—a clear saving of at least \$13.75. Post yourself on motor boating and the safest, cheapest way to buy by writing today for our 1913 catalog. It's soon time to start—**Get Busy.**

LOCKWOOD-ASH MOTOR CO., 302 Horton Ave., JACKSON, MICH.



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Are the Most Efficient For Speed,  
Pleasure and Commercial Boats

Unexcelled in design, material and workmanship.

Made in diameters and pitches to suit all conditions.

All Genuine Hyde Propellers have the name stamped on the hub.

### The Irish Pneumatic Clutch Control

The latest and best method of controlling the engine from the steering stand or station, using air from the whistle tank.

HYDE WINDLASS CO.

BATH, ME.

## PUT THE POWER OF NIAGARA

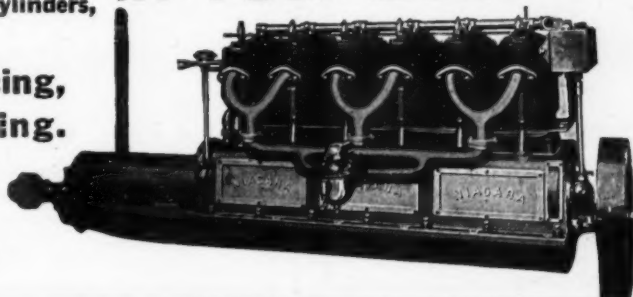
In Your Boat

Four Cycle, in 2, 4 and 6 Cylinders,  
5 to 100 H. P.

For Cruising, Racing,  
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75% of Niagara Sales due to  
Satisfactory Service.

Niagara Motors will Operate  
on Kerosene or Gasoline.



Highest Quality at  
Moderate Price.

In Service Nearly Ten Years  
and Not a Dissatisfied  
Customer.

We can save you money and much  
annoyance. Get Catalog.

Niagara Motors & Mfg. Co., Inc.  
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## BROKEN PARTS WELDED

We weld cracked cylinders and crank cases—make them as good as new. All repairs made within twenty-four hours after part reaches our shops. Illustration shows cylinder on which we saved the Consolidated Motor Company of Bridgeport, Conn., \$30.00.

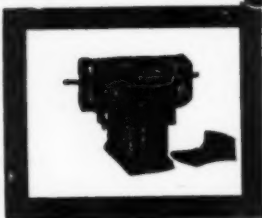
### Scored Cylinders a Specialty

By a special process we repair cylinders scored from a loose wrist pin. Bore is not enlarged—your old piston and rings will fit repaired cylinder. Our charge, on cylinders up to 6" bore, \$12.00.

Where cylinder is worn or scored in many places from lack of oil, so that our special process does not apply, we can re-grind the cylinder absolutely round and fit new piston and rings. Repaired cylinder will have same compression and motor the same power as when new. Charges according to size of bore. Always send one piston with the cylinders.

Write for booklet and full information  
**GUARANTEED**—If within one year from date of repair, part is found unsatisfactory, ship back at our expense (by freight collect). Upon examination, we will refund all charges, or, if you prefer, do the work over without extra charge.

**WATERBURY WELDING COMPANY**  
1148-C SO. MAIN STREET, WATERBURY, CONN.



## ELECTRIC SEARCHLIGHTS

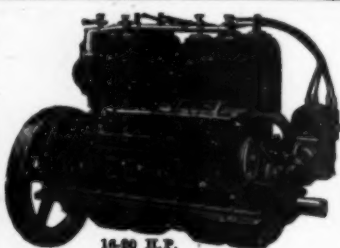
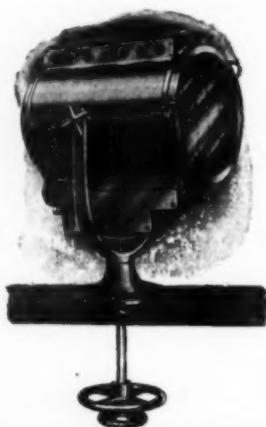
Send TODAY for Catalog "A" Containing Valuable Information About Modern Lighting Plants.

We have equipped some of the finest power boats, yachts and launches afloat with Direct Connected Generating Sets. All leading ship and launch builders use them, because they are unequaled in brilliant, dependable service.

Searchlights in designs from 7 in. to 60 in. diameter.

Let us tell you about our big line:

**The Carlisle & Finch Co.**  
261 East Clifton Avenue  
CINCINNATI, OHIO



16-20 H.P.

This letter from Mr. Jenkins is a general expression of satisfaction that we receive from all PEERLESS users.

4 Cyl. 16-20 H.P. Bore 4 in., Stroke 5 in., \$300 complete.

3 Cyl. 8-10 H.P. Bore 4 in., Stroke 5 in., \$175 complete.

Reverse gear on lower half of base, \$40 extra.

Write today for catalog.

**PEERLESS ENGINE COMPANY,** Buffalo, N. Y.

## PEERLESS

SECURITY MUTUAL LIFE INSURANCE CO.  
Binghamton, New York.  
Frederic William Jenkins  
President

August 8, 1913.

Peerless Marine Motor Co.,

Buffalo, N. Y.

Gentlemen—The four-cylinder 16-20 H. P. Peerless engine that you installed in my boat this spring has worked first rate, even better than I really anticipated; it starts easily, seems to be remarkably reliable, and has lots of power. I have tried a log on this boat and got 13 miles per hour, which is very good for this type of boat.

Before buying your motor I made a personal inspection of practically all the first-class motors on the market. In making my selection it was not a matter of price, but your engine struck me as being a most complete and compact machine, and one that would prove itself reliable under all conditions. Assuring you that I will be pleased to recommend your motor at any time, I remain

Very truly yours,

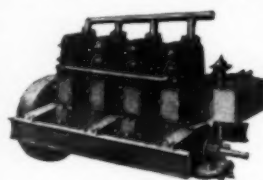
F. W. JENKINS.

(Enclosure)

FWJ/N

## \$75.00 RELIANCE MOTORS \$75.00 FORMERLY \$350.00

We have only a few of these Motors left. They are 3 and 4 Cylinder-Valveless 2 Cycle. Bore 5 1/8 inch by 5 inch Stroke.



4 Cyl. 38 to 60 H. P.

3 Cyl. 26 to 45 H. P.

Speed 800 to 1200 R. P. M.

We are sure that this is the best 1914 offer presented to Motor-boatists. Write for catalog, etc.

**NICHOALDS CO.**

430 GRAND RIVER AVENUE :: :: DETROIT, MICH.

## MOTOR BOAT TOPS



Something new and classy.

Different from the tops usually found on the market in point of *Material, Style and Finish*. Send at once for our catalog of *Motor Boat Tops, Life Preserver Pillows, Cushions, etc.*

**THE C. Z. KROH MFG. CO.**

1213 JACKSON AVE.

TOLEDO, OHIO

## FRISBIE MOTORS

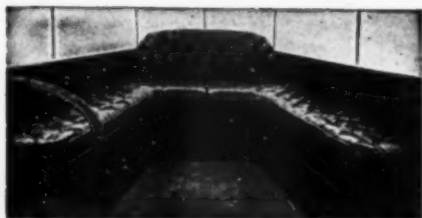
1 to 6 Cylinder, 3 to 75 H. P., 4 Cycle,  
High Quality, Moderate Cost

A well-balanced combination of simplicity and economy is offered you in the Frisbie motor. *Kerosene or gasoline.*

The Frisbie is increasing in popularity with the rising price of fuel because it uses either kerosene or gasoline and is making good everywhere.

Write us for the name of our nearest agent.

MFD BY THE  
**FRISBIE MOTOR CO.** MIDDLETOWN, CONN. COLLEGE ST.



Showing life-preserver cushions in cockpit of motor yacht.



We are making a specialty this season of our life-preserver Cushions, covered with genuine Marocco-line, with filling of Prime Java Kapoc, the lightest and most buoyant filling known. To stimulate the early placing of orders, we will accept a limited number of orders for these cushions at a special price of seventy-five cents per square foot.

### Cushions That Fit

Manufactured since 1868, by

Life-preserver Pillow Cushion 36 per cut, Eighty-five cents each, or nine dollars per dozen. Size 18 x 18. Send for booklet.

**M. W. FOGG**  
202 FRONT STREET  
NEW YORK

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Write today for full details of the

**Annual Buyers' Reference and Export Number of**

## Motor Boating

Published December 1st

Also for information about the New Edition of Motor Boating's Marine Trade Directory.

J. S. HILDRETH  
Adv. Mgr.

**MoToR Boating**

119 WEST 46th ST.  
NEW YORK





## Detroit Oilers give double economy

The Detroit Force Feed Oiler supplies *exactly* the right amount of oil at all times.

Every drop of oil is measured and forced to the place where it is needed and eventually used up. The engine speed fixes the rate of feed. *Always* enough oil, yet never a bit is wasted.

Every drop is put where it counts.

A Detroit Oiler saves you money by cutting down your oil bill and preventing wear and tear on the motor, with repairs and quick depreciation as results.

Detroit Oilers are made for every kind of engine—marine, stationary, automobile, truck and gas tractor—with pulley, ratchet, gear or sprocket drive for easy installation on any outfit.

Specify a Detroit Oiler on your next engine or put one on your present outfit.

Write today for catalog P-64 and full information, stating in what kind of engine you are interested.

**DETROIT LUBRICATOR COMPANY.**  
DETROIT, U. S. A.

*Largest Manufacturers of Lubricating Devices in the World*

## JUMP-SPARK or MAKE-and-BREAK TROUBLES SOLVED



### ORSWELL Master Vibrator

Absolutely perfect — smooth running — gives added power — carries off excess heat — no soot deposit—simplest wiring system known — low current consumption — money back guarantee. Send for illustrated circular.

**THE RELIABLE FIRE EXTINGUISHER**  
*Has No Equal—Used by U. S. Government and approved by the United States Steamboat Inspection Service.*

*Send for Descriptive Circular and Endorsements as to its efficiency.*

**CHAS. D. DURKEE & CO., Inc.**  
*Largest Makers of Best Marine Goods in the U. S. A.*  
2 and 3 South Street New York City  
*Send 30c for postage on 1000 page Catalogue free*

## Here's Engine SERVICE that IS Service

July, 1905, The Cleveland Cliffs-Iron Co., of Negaunee, Mich., bought a 30 H. P. Doman. The mileage is as follows:

1912..... 5,072 MILES  
TO DATE..... 44,715 MILES

The owners, in writing us recently, say:—

"During this time the boat has been out of commission six (6) hours, due to a broken shaft, caused by hitting a sunken log. We are glad to give you this information, as we do not believe the performance of this engine could be excelled.

"You must understand that the boat which this engine propels is not running on a 'little inland lake' or 'duck pond,' but is operating on Lake Superior. The boat has seen service in some of the most terrific storms known on this big lake, and never for a moment has the engine faltered, when it might have meant death to all those aboard the boat."

It's just such service as this that has won renown for



and the fact that every Doman is as good or better than its reputation, makes every owner a sincere booster. If you're interested in boat power of any kind, write for catalog and the Doman "Owner's Book."

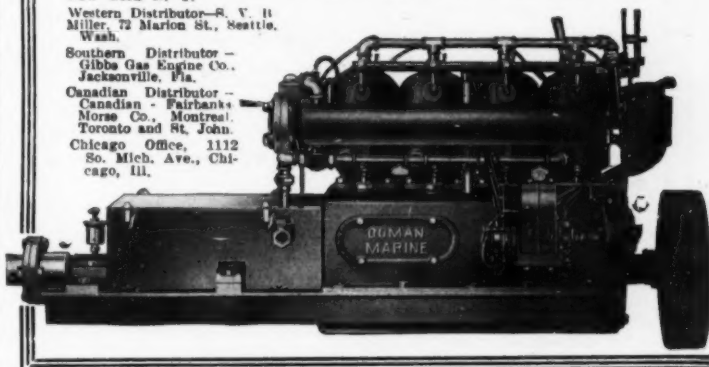
**H. C. DOMAN CO. Dept. C, Oshkosh, Wis.**  
Eastern Distributor—J. H. Scanlan, 202 Fulton St., Hudson Terminal Bldg., New York N. Y.

Western Distributor—R. V. H. Miller, 72 Marion St., Seattle, Wash.

Southern Distributor—Gibbs Gas Engine Co., Jacksonville, Fla.

Canadian Distributor—Canadian Fairbanks-Morse Co., Montreal, Toronto and St. John.

Chicago Office, 1112 So. Mich. Ave., Chicago, Ill.



## Why Spend Money Repairing an Old Motor When You Can Buy New Motor for Same Sum?

OUR LATEST FACTORY CLEAN UP

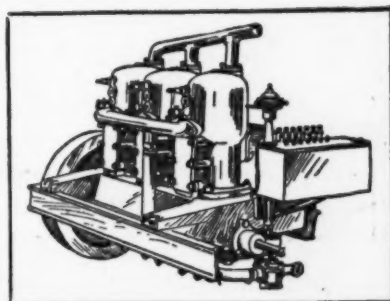
## New Reliance Motors

Regular Price

**\$350**

OUR PRICE

**\$95.**



Equip your power boat with a modern, superior motor—3-cyl. valveless—2-cycle—15 H.P.—5½-in. bore—5-in. strokes—Complete with oiler. Other Big Bargains in Two- and Four-Cycle Motors.

CAN BE USED ON MOTOR BOATS—AS STATIONARY ENGINES—OR FOR ANY PURPOSE SUITED TO GAS ENGINES

Write for "Our Price Wrecker"

## TIMES SQUARE AUTO CO.

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CHICAGO  
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World's Largest Dealers New-Used Automobiles and Accessories

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**USL**  
The United States Light and Heating Co.

### STORAGE BATTERY

Motor-Boat Electric Lighting is such a simple, economical, and reliable proposition with a U-S-L Lighting & Ignition Battery that no Motor-Boatist can afford to be without the many advantages of electric light.

Every season more motor boats take the water equipped with U-S-L Batteries than the season before. Next season thousands of these Batteries will be used.

Write to-day for full information about this rugged, compact, and highly efficient Battery. It's the one Battery that makes electric light easily possible on every boat.

The U. S. Light & Heating Co.  
General Offices: 30 Church St., New York

Branch Offices & Service Stations.  
New York, Cleveland, St. Louis, Boston, Detroit, San Francisco, Buffalo, Chicago.

**KERMATH**

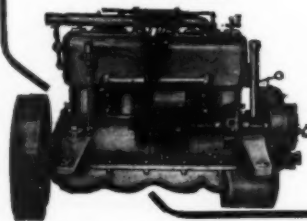
## Marine Motors

4-Cycle, 4-Cylinder, 3½-inch Bore, 4-inch Stroke

There is not a better motor made in the world to-day in this size and type, absolutely regardless of price. The quality has not been slighted even in the most minute detail, and quantity production with concentration of our entire effort on this one size makes the low price possible on such a high grade motor. This is a rich man's engine at the average man's price and combines those excellent features of perfect control from 100 to 1000 r.p.m. and the quiet and smooth operation found only in the highest priced motors.

**\$200.00**

With Dual Magneto  
12 Horse Power



Catalogue on  
Request

**Kermath Mfg. Co.**  
Detroit, Mich., U.S.A.  
Dept. D

# Annual Buyers' Reference and Export Number *Motor Boating—December Issue*

Every advertiser is warranted in using maximum space in this issue. Although its unusual and extra advertising value is unquestioned, the advertising rates will remain the same as for regular issues. Beyond this we have a special proposition in conjunction with this issue which we will be glad to outline upon request.

**MANUFACTURERS:** *Whether you advertise in Motor Boating (or any other publication) regularly or not, do not fail to use large space in the December issue of Motor Boating. Write at once for information regarding the special proposition offered to advertisers in connection with this number.*

J. S. Hildreth  
Advertising Manager

**MOTOR  
BOATING**

119 West 40th St.  
New York City



## Baldridge Reverse Gear

Questions of  
Mr. Careful Gear Buyer  
No. 3

### "Why enclosed?"

The "Baldridge" is fully enclosed. Can't throw oil all over you or your guests. Dirt can't get in to clog working parts. Keeps out bilge water and prevents rust.

This entire enclosure is an exclusive "Baldridge" feature. It is just one of those many points of extra value, at no additional cost, that make the "Baldridge" extra safe, extra efficient and extra durable.

It stands to reason that no unenclosed gear can give the 100 per cent. service that you have a right to expect when you buy.

Get the "Baldridge" Book—it will explain better why you should own the "Baldridge" gear.

"The gear with the unbroken main shaft"



### The Baldridge Gear Co.

678 West Grand Blvd.  
Detroit, Mich.

Handled in Canada by  
The Canadian Fairbanks-  
Morse Co., Ltd.

## USE KEROSENE Save 60% on Fuel

No matter how rich you are, you can't afford to pay twice as much as necessary to run your marine engine. If you can't use anything but gasoline in your present engine, it will pay you to scrap it and buy a

## KNOX MARINE MOTOR

Knox Motors have now been running on kerosene, distillate and alcohol for over three years. They are the motors that popularized the kerosene idea, the motors that proved it possible to secure perfect results.

We can guarantee 100% interest on your investment in less than twelve months, if you buy a Knox. That is what it saves on fuel alone.

Read what one user writes us:

Trinity,  
Newfoundland,  
May 14th, 1913.

It may interest you to know that we are running two of your engines, one 7 1/2 H.P. and the other 5 1/2 H.P., and find that they run better on kerosene than gasoline. For a comparison of the amount of fuel consumed, we use 10 gallons of gasoline, while we are using about 200 gallons of kerosene, the gasoline being used only for starting.

Very truly yours,  
(Signed) Joseph Morris & Sons.

We make these motors in six sizes from 8 to 40 H.P., one, two, three and four cylinder, two and four cycle. Write for catalog.

### Camden Anchor-Rockland Machine Company

CAMDEN, MAINE, U. S. A.

#### SALESROOMS:

180 State St., Boston, Mass. 100 Prince Wm. St., St. John, N.B.  
99 E. Bay St., Charleston, S. C. Merrill's Wharf, Portland, Me.

## DONT BLAME YOUR MOTOR. GET A BRYANT & BERRY PROPELLER SPEED GUARANTEED

We  
Guarantee



1 to  
3 Miles  
Per Hour

### To Increase the Speed of Your Boat

This is the guarantee we have been making for the past five years, the guarantee under which we have sold thousands of B. & B. propellers. This is your protection and insurance of satisfaction when you buy a B. & B. wheel. You don't have to depend on argument or unfounded claims.

B. & B. propellers give you the highest degree of speed and power your boat and engine are capable of. Their efficiency is as near perfection as it is possible to attain. They reduce the percentage of slip and produce the maximum propelling force for the horsepower used.

The materials and workmanship used in B. & B. wheels are equal in superiority to the design. We use a special bronze as strong as steel. The accuracy and finish are beyond criticism. And in spite of all this, our prices are lower than for any other make of wheel.

When you buy a propeller, get a genuine B. & B.—don't accept a substitute or imitation. Look for the name "Bryant & Berry" stamped on the hub. Certain peculiarities of design make it impossible for copies of our wheels to equal the originals in efficiency.

### BRYANT & BERRY COMPANY

28 WEST ATWATER ST DETROIT, MICH

Canadian Fairbanks-Morse Co., Canadian Sales Agents.

E. J. WILLIS CO. - - - New York Agents

## Concentrate Your Purchases

with a modern, progressive supply house, centrally located, doing business with a big, clean stock in an up-to-date plant.

## GEO. B. CARPENTER & CO.

430-440 Wells St., Chicago

"The Great Central Market"

Manufacturers and Jobbers of

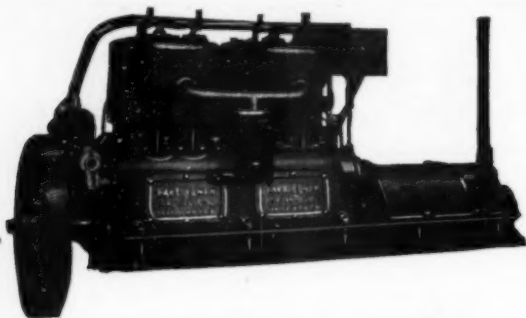
MARINE SUPPLIES,  
MOTOR BOAT FITTINGS.  
BOAT TOPS, RACING SAILS, Etc.

Send 20c. in stamps to cover postage on our 550-page Marine Supply Catalog No. 101, to be refunded on your first order.

If you already have the Catalog, send for our

## 1913 NET PRICE LIST

Ready now—issued free—an innovation in the trade.



### It's the Power Plant

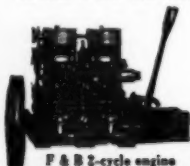
that finally makes the motor boat. The "go" has been put into many a slow boat by a

## FAY & BOWEN Perfect Power Plant

Its system of triple lubrication for crank pins is unique. It has Bosch Dual Magneto ignition, long stroke, mechanically operated intake and exhaust valves, mechanical and splash lubrication, multiple-plate reversing clutch. Put up in two, four and six cylinders—5 to 65 horsepower.

F & B two-cycle Engines are best of their kind, 2½ to 45 horsepower.

F & B Boats are made in different sizes and types, from a 21 ft. launch to a complete cruiser.



#### Send for Catalog and Prices

on the kind of engine or boat you want. If you don't know we'll help you decide.

#### Fay & Bowen Engine Co.

104 Lake Street

Geneva, N. Y., U. S. A.

### Bid Good-by To Oars & Paddles



Let a Caille Portable Boat Motor take you anywhere you want to go over lake, stream or river. Can be instantly attached to square or pointed stern row-boats. Travels seven to nine miles an hour. A child can run it.

### Caille Portable Boat Motor

is steered by a rudder like a launch—not by the propeller. Can be quickly adjusted to any angle or depth of stern. Starts with half a turn of the flywheel. Runs 7 hours on a gallon of fuel. Can be used in salt or fresh water.

#### RELIABLE DEALERS WANTED

The extensive advertising campaign we are about to launch will create a tremendous demand for these engines. We must have good live dealers everywhere to meet this demand. Send for our liberal dealer's proposition now—today—before someone else gets the territory.

#### We Also Build Marine Engines Up to 30 H. P.

These embody all sizes—from one to four cylinders. Ask for beautiful catalog. A postal brings all. Send today—now.



**CAILLE PERFECTION MOTOR CO.**  
1202 Caille Street - DETROIT, MICH.

# AMERICAN

## Simplicity, Efficiency and Reliability

are some of the superior qualities of AMERICAN MOTORS, and are of vital importance to YOU.

The AMERICAN is absolutely right in design and principle of operation, and must run continuously from the time you start it until you throw off the switch—it can't do anything else. YOU should own an

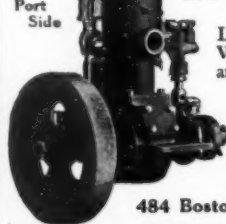
AMERICAN and enjoy the full pleasure of motor boating or get constant service with your work or fishing boat.



### Guaranteed for Life—30 Days' Free Trial

Starts without cranking, is reversible and runs on gasoline, kerosene or other fuel—very economical and is the one favorite with boatmen everywhere. Thousands in use and all giving perfect satisfaction and efficient service in every kind of boat.

All sizes, 2 to 30 h. p. Lowest possible prices. Let us tell you all about the AMERICAN. Write for new Free Catalog giving full information and prices.



Good demonstrator Agents and Boat Builders, write for special terms and sales plan. Some valuable territory still open. Get in on this now.

**AMERICAN ENGINE CO.,**  
484 Boston Street DETROIT, MICHIGAN



## MONARCH Spar Varnish

Unapproached in lasting qualities by any other varnish. Perfection for all outside uses.

### Gillespie's Monolac

The best varnish made for interior marine work, cabins, woodwork, floors, etc. Furnished in colors and clear.

### Monarch Bull Dog Remover

A paint and varnish remover that acts almost instantaneously on ordinary work. The only product which satisfactorily removes old lead, zinc paint, enamel or shellac. Does not burn the hands.

#### A Treatise on Refinishing Yachts and Motor Boats

This book gives invaluable advice and hints which every boatman should know. Free upon request.

Send four cents postage for free  
Distance Finder for use on charts

**CHAS. H. GILLESPIE & SONS**  
JERSEY CITY ESTABLISHED 1921 NEW JERSEY





**HE FEARS NOT SPARKS**  
whose motor boat is equipped with a  
**"JASCO TANK"**

—fears them not because he *knows* that his gasoline supply, kept in this seamless, leakless, drawn steel receptacle, is fireproof. "Jasco tanks" are at once a safety assurance and an economic necessity to the motor boat owner.

\* The old-fashioned riveted or seamed tanks are bound, sooner or later, to become leaky. Then a match struck carelessly, a spark from pipe or cigarette, and fire or explosion with all their accompanying horrors are liable to occur. And even if this does not happen, think of the constant drain on your pocketbook that a leaky tank causes! Protect yourself NOW by installing a "Jasco tank" in your boat.



Made in all standard styles and sizes, or if your boat presents special requirements we can build a tank to exactly suit it at small additional cost. Write us. You want our card showing U. S. Marine Signals. Sent free on request.

**JANNEY, STEINMETZ & COMPANY**

MAIN OFFICE:  
PHILADELPHIA, PA.

NEW YORK OFFICE:  
HUDSON TERMINAL BUILDING

**JOE'S DUPLEX DRIVE**  
Heavy Duty Reverse Gear



Section Showing Quadruple Gearing

The only heavy duty gear on the market that has **same speed ahead and astern** that does not depend on locked gear teeth for the forward drive.

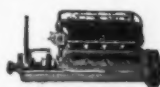
Send for 1913 catalogue

**THE SNOW & PETRELLI MFG. CO.**

New Haven, Conn., U. S. A.

Manufacturers of Heavy Duty and High Speed Reversing Gears, One Way Clutches, Rear Starters, etc.

AGENTS:—J. King & Co., 10 Church Row, Limehouse, London, Eng. L. H. Coolidge Co., Seattle Wash. The Canadian Motor & Supplies Co., Montreal, Canada. Gasolene Engine Equipment Co., 133 Liberty Street, New York. Chicago Boat & Engine Co., 1508 Michigan Blvd., Chicago.



"I never saw a motor stand up and give better service than this motor has."

(from letter) JOHN W. HUBBARD

The motor which Mr. John W. Hubbard speaks of in this letter is a 6-cylinder which he has used for 6 years.

Such enthusiastic comment from a Scripps owner should indicate to you, in some measure at least, the exceptional ability of the Scripps Marine Power Plant.

Here's another one from a man who has had a chance to make a comparison.

"The 4-cylinder Scripps has given excellent satisfaction in every way: In fact, I took more pleasure out of the boat this season than during the last two seasons when it was equipped with another make of engine which gave me considerable trouble. My repair expense bills ranged from \$75.00 to \$100.00 a season, but this year they have cost practically nothing, as I have had no trouble whatever, and the gasoline consumption was about half that used by my last engine."

GEORGE L. LEONHARD."

Insure a satisfactory and successful motoring season by specifying Scripps.

You will not be disappointed.

Let us have your specifications early.

**Scripps Motor Company**

631 Lincoln Ave., Detroit, Mich.

SCRIPPS MOTORS ARE CARRIED IN STOCK BY

New York ..... Bowler, Holmes & Hecker Co., 141 Liberty Street  
Chicago, Ill. .... O. L. Cosgrove & Co., 215-219 Englewood Ave.  
Philadelphia .... W. E. Gochenaur, 631 Arch Street  
Jacksonville, Fla. .... Gibbs Gas Engine Co., Foot of Main Street  
Seattle, Wash. .... S. V. B. Miller, 72 Marion Street  
San Francisco, Cal. .... California Gas Engine & Motor Boat Co., 76 Clem-  
Los Angeles, Cal. .... Marine Engine & Supply Co., 109 East 7th Street  
Duluth, Minn. .... Kelley Hardware Co., 118-120 W. Superior Street  
Toronto, Ont. .... Schofield-Holden Machine Co., 2 Carlow Avenue  
New Orleans, La. .... Arthur Duvic, 130 Chartres Street



Put Packard Cable in your boat when you rewire it. You won't have to rewire again next year. Packard Cable is made to resist heat, water and oils for years. Send for sample, folder and price list, mentioning name of your dealer.

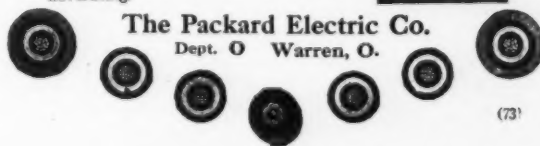
**A Book You Need**

Makes you familiar with every electrical device on your boat. Contains 48 pages of real information about generators, storage and dry cell batteries, separate lighting sets, wiring, high and low tension ignition and U. S. Marine regulations, including lights, life preservers, fire extinguishing apparatus, etc. Sent postpaid for 25 cents to cover cost of printing. Contains no advertising.



**The Packard Electric Co.**

Dept. O Warren, O.



(73)

Mr. Manufacturer:—Are you one of the few not using

## STAR THRUST BALL BEARINGS

in your Motors? If you are, you are not receiving the best results. Send us your Blue Prints.



The Star Ball  
Retainer Company

Lancaster, Pa.

**MARINE HARDWARE**

EVERYTHING NEEDED  
To Equip Any Sort of Boat  
Steering Wheels, Lights, Bells, Pumps,  
Silencers and Hermetic Battery Cases,  
Reverse Gears, Lights, Tanks, Mufflers, etc.

**A. S. MORSS CO.,** 43 High Street  
Boston, Mass.



Type "M"  
Marine

## AMPCO

### The Faultless Distributor

The Ampco is the only distributor on the market that is absolutely fool proof. Further, it absolutely eliminates all the usual insulation troubles.

The Ampco insures perfect synchronism and will start your motor on even a quarter turn.

Write for folder 21 for details

**American Motor Parts Co.**

52d and Baltimore Ave.

Philadelphia, Pa.

**Auto Craft LAUNCHES**

We carry a complete line of  
ROW BOATS—FAMILY BOATS—  
RUNABOUTS—CABIN CRUISERS  
Write for catalog

THE CLEVELAND AUTO BOAT MFG. CO.  
1087 W. 11th St., Cleveland, Ohio.

**Perfect Control is Essential to Safety**

Specify a "Reliance-Rochester" Steering and Engine Control

23 Styles

Write for literature]  
W. S. HALL CO., 1123 Cortland St.  
Rochester, N. Y.

# ANDERSON ENGINE

You can no more afford to ignore the superior qualities of the ANDERSON ENGINES of 1913-14 than you can afford to buy a 1900 model automobile.

If not up on Marine Engines, write for our literature.

**ANDERSON ENGINE CO.** 136 SO. DEARBORN STREET, CHICAGO, ILLINOIS

## ELDRIDGE-WHITAKER HYDROPLANE



25 MILES PER HOUR GUARANTEED

BEAUTIFULLY FINISHED IN MAHOGANY

WE ARE DISTRIBUTORS FOR

- Lamb and Winton Four Cycle Marine Engines—
- Fulton and Erd-Featherweight Two Cycle Marine Engines—
- Eldredge-Whitaker Hydroplanes—
- Nantucket Motor Dories—

Full line of engines and boats always on exhibit at our showrooms. All motor boat owners or prospective owners are invited to examine this permanent exhibit whenever in New York City.

**ALBERT E. ELDRIDGE CORPORATION**  
Fulton End Concourse 30-50 Church Street, New York.

## A NEW PRIMING COCK

Will Not Leak, Stick, nor Seize

Will Grind in Instantly

Cheaper than the troublesome old kind

MADE BY

**MORGAN MFG. COMPANY**  
JOHN ST. NEWPORT, R. I.

NOTE THIS BALL JOINT VALVE WITH SCREW DRIVER SLOT FOR GRINDING NOTE THIS LARGE STRAIGHT HOLE

STEEL

Which is a guarantee of service and quality

M'n'f'rs of Morgan's Hose Clamps and Utility Tools



# ROBERTS

The Motors That Never Backfire



"SWEET 16"—4-P 40 H. P. 36.73 M. P. H.

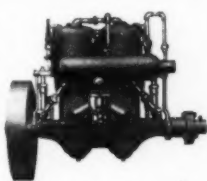
THE motor in "Sweet 16" is 5 years old, and has been in use every season. Champion of Puget Sound, she is the fastest boat for her power in the world. We make twelve sizes of motors, from 3 to 125 horsepower, for boats of all kinds. We build the lightest marine motors made for their power.

Write for Catalog Today

**THE ROBERTS MOTOR COMPANY**  
1501 COLUMBUS AVENUE, SANDUSKY, O., U. S. A.

## KENNEBEC

### Gasoline Engines



If you are one who demands full service and reliability from a marine engine, you cannot be better satisfied than by getting a Kennebec. This is an engine which will give you perfect satisfaction for years to come. It will run day after day, year in and year out, with the greatest economy and the least trouble, and you can risk your life on it if necessary, because it won't fail you.

The Kennebec Engine gives thirty to forty per cent. more horse power than its rating. We allow them ample bore and stroke and rate them honestly at moderate speeds, because an engine designed for hard, continuous service like the Kennebec must run at moderate speed if it is to have durability and give permanent satisfaction. We build power into these motors and it has got to come out.

The Kennebec is sturdy and reliable enough for the fisherman who must use it every day, and handsome enough for the finest pleasure boats. Every engine user wants Durability, Economy and Easy Accessibility no matter what type of service he requires. Ask any fisherman what he thinks of the Kennebec. If he has ever seen one working, we know what his answer will be.

14 Models. 2 to 16 H. P. 1 to 3 Cylinders. Two Cycle.

WRITE TODAY FOR CATALOG

**TORREY ROLLER BUSHING WORKS**  
BATH, MAINE, U. S. A.

## What We Can't and What We Do Promise



### Piston Rings

(PATENTED)

Not a "cure-all"—they won't mend leaky valves—they won't re-bore or re-grind cylinders; therefore, we can't honestly or intelligently tell you that irrespective of all other conditions they will increase your power such-and-such a per cent—

But—on the promise that your valves don't leak and that your cylinder is true we do promise that throwing out ordinary piston rings and replacing with Leak-Proof Rings will insure perfect compression, maximum power and economy in fuel consumption. It will eliminate the leakage of gas (waste power) and minimize carbonization caused by oil getting up into the cylinder through the piston rings.

Leak-Proof Piston Rings are made of Processed Gray Iron, possessing the necessary spring and elasticity, and owing to their construction give equal tension on cylinder walls. Made in all sizes and sold by all up-to-date dealers, garages and repair shops.

Now in Use on 150,000 Automobiles

#### "ASK THE USER"

A booklet on request—complete information as to how Leak-Proof Piston Rings can be applied to your piston problems if you'll write us.

Manufactured by

**McQUAY-NORRIS MFG. CO., Dept. B, St. Louis, Mo.**

BRANCH OFFICES

New York—63 Lincoln Square Ct.

B'way at 64th St.

Pittsburgh—7020 Tioga St.

Kansas City—1504 Grand Ave.

Chicago—39 Merchants Bldg., 106

N. LaSalle St.

San Francisco—164 Hansford Bldg.

Ft. Worth—108 Bryan Ave.

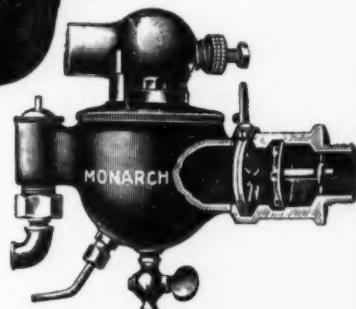
Los Angeles—224 Central Bldg.

## IF YOU REALLY

desire to get more power out of your engines equip them with Monarch Auxiliary Air Valves and Monarch Special Carbureters. A Monarch Pump Suction Connection and Strainer may save your engine or boat.



Monarch Pump Suction Connection with Strainer.



Monarch Standard Carburetor Type H 1011 Model. Side outlet. (Patent Pending)



Monarch Auxiliary Air Valve. Will increase the power of your two-cycle engine.



Monarch Stuffing Box. Note the loose-packing Gland.

Monarch Goods are Guaranteed not for 30 days, but until they are worn out. Unless Vertical Carbureters are specified, all Carbureters are shipped Horizontal Pattern. Other Specialties offered from time to time. Full information for the asking.

**MONARCH VALVE CO., 112 Front St., Brooklyn, N.Y., U.S.A.**

Member [ National Association of Boat and Engine Builders  
[ Marine Supplies Association of America



## MICHIGAN STANDS FOR QUALITY

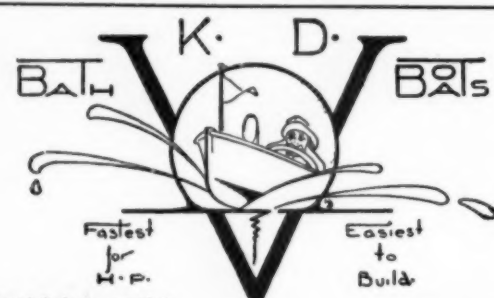
### Propellers, Reverse Gears and Marine Hardware

The speed of your boat depends upon the propeller; we can increase your speed. Also propellers for towing, work boats, launches and cruisers. Our Reversible propeller is world renowned.

Multiple disc reverse gears, automobile steering wheels, universal joints and hundreds of other articles for motor boats. Large catalog sent free.

**MICHIGAN WHEEL CO.**  
1115 Monroe Ave. Grand Rapids, Mich.

*Oldest and largest exclusive manufacturer in America*


**BATH V-BOTS**

Fastest for H.P. Easiest to Build

If interested in a complete boat, ready to run, a hull ready for engine, a knock-down boat, full size patterns, or plans; for pleasure, work, speed or comfort; let us know your requirements and get our figures before purchasing.

Remember we are the originators of the famous Bath V-Boats and Hydroplanes of the "Bumble Bee" Type. Catalogue G gives our line and will be sent on request.

**Bath Marine Construction Co., Bath, Me.**  
HENRY DOUGLAS BACON, Naval Architect



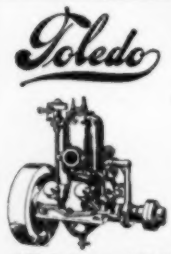
# SPLITDORF

"Always There"

The SPLITDORF "T S" TRANSFORMER is interchangeable with any type tube or dash coil and can be attached to any car. We will make a very liberal allowance on an old coil in exchange for one of the new style.

*Write TO-DAY for particulars*

**SPLITDORF ELECTRICAL CO.**  
98 Warren Street, Newark, N. J.



## Toledo Marine Motors

### Low Priced. High Quality

Would you believe the man who spent his money for one? Then let us send you the evidence.

The Toledo two-cycle, two-port, marine motors that we sold years ago are still giving excellent service. No other proof is so thoroughly convincing of the high quality of our engines.

When price is considered comparatively, it is lower than other makes. The essential features are all to be found in the Toledo motors. Nothing has been left out that would add convenience, power and reliability to the motor, and all fittings are standard size, so that the motor can be installed or taken out and supplies obtained at any hardware store. No special tools are necessary to install or take down the Toledo Marine Motor. This is a decided advantage.

*Write today for catalog "W."*

We still have some open territory where we could use a few good agents. If interested ask for proposition.

**UNIVERSAL MACHINE CO.**  
1600 Hicks St. Bowling Green, O.

3 H. P. 1 cyl.	\$65.00
6 H. P. 1 "	84.00
6 H. P. 2 "	125.00
12 H. P. 2 "	160.00
18 H. P. 3 "	250.00



## Something Needed

GET OUR BIG FREE CATALOG OF BOAT FITTINGS & SUPPLIES

**THE OSHKOSH METAL PRODUCTS CO.**  
OSHKOSH, WISCONSIN

# KRICE Carburetor

## 20% More Power

**30 DAYS TRIAL**

We absolutely guarantee the Krice Carburetor to use less gasoline—give better control and 20% more power. Your money back if it doesn't.

The only sure way to know that you are getting all the power from your engine is to try a Krice Carburetor. Write today for literature.



**KRICE CARBURETOR CO.**  
1201 Oakland Ave., Detroit, Mich.

## BE YOUR OWN BOAT BUILDER

or let us build it for you with a small additional expense. Our complete up to date factory reduces the cost of production to a minimum. We build all sizes, from 9 ft. Dinghy to 60 ft. Cruiser. This illustration represents one of our latest creations. Will furnish this with or without engine installed. Should you have some spare time, we



would advise you to send for our frames and put them together yourself and thereby save 75% of cost. The illustration of frame applies to our models from 18 to 40 ft. cruisers. Other special designs submitted if desired. Send for further information and catalog and special quotations.

**Pioneer Boat & Pattern Works., Wharf 15, Bay City, Mich.**

## New York Yacht, Launch & Engine Co.

MORRIS HEIGHTS, NEW YORK CITY



ABALONE, E. H. Lyon, New York.

**Builders of 20th CENTURY MOTORS**  
12 H. P., 2 cylinder, to 100 H. P., 6 cylinder  
Send for catalogue

**Builders of YACHTS**  
of all description  
Let us figure on your new boat





THE peculiar fire danger on motor boats can be overcome in only one way—by the

**Pyrene**

**FIRE EXTINGUISHER**  
Pyrene is designed for the seemingly inaccessible gasoline or oil fire.

Approved by the United States Steamboat Inspection Service.  
Included in the lists of approved fire appliances issued by the National Board of Fire Underwriters.

WRITE FOR BOOKLET

**PYRENE MANUFACTURING COMPANY**  
1358 Broadway, New York City

Atlanta Baltimore Boston Buffalo Chicago Dayton Denver Louisville  
Memphis Norfolk Oklahoma City Pittsburgh St. Louis San Antonio York, Neb.  
Pacific Coast Distributors: **GORHAM ENGINEERING CO.**  
San Francisco Los Angeles Seattle

**DON'T WORRY**  
The "NAVY" will hold Her

You should ask your dealer for it. If he doesn't carry the "Navy," write us for nearest dealer who does. Send for illustrated booklet of other specialties. Ask your dealer for **ANCHORS, WHEELS, DECK PLATES, COMPASSES, ROWLOCKS, BOAT NAILS, HOOKS, CABLE CHAINS, LIGHTS, LANTERNS, PUMPS**—in fact anything in the marine hardware line—up-to-date, dependable—backed by 66 years' experience.

**WILCOX, CRITTENDEN & CO., Inc.**  
Established 1847  
Middletown, Conn.  
Largest Makers of Marine Hardware in the World.

**E. J. WILLIS COMPANY**  
85 CHAMBERS ST. NEW YORK

"Wilco"

The best closet for such a reasonable price. Guaranteed for a year.



Bowl made of vitreous china—metal parts of cast brass—woodwork of finished oak.

**Cash Price, \$19.90**

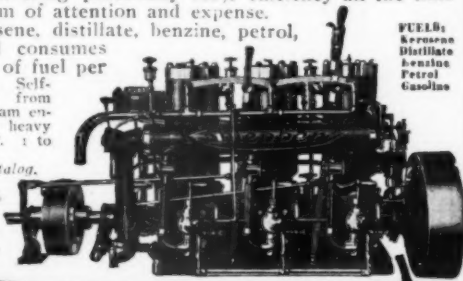
Send for cut rate Catalog "B." Everything for the Motor Boat

**Kahlenberg MARINE MOTORS**

Year in and year out the Kahlenberg is increasing in popularity and sales. Year in and year out it is giving perfect service to its users, delivering practically 100% efficiency all the time with the minimum of attention and expense.

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"SMILE" LIGHTING SYSTEMS

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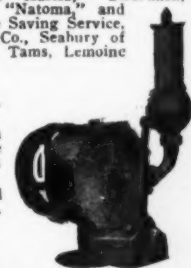
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The signal is blown by compressed air from a Rotary Blower, driven by engine flywheel. The whistle may be placed on the blower or anywhere in the boat.

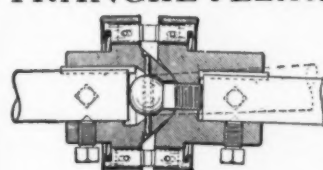


With each outfit we give a handsome nickel-plated whistle, and extra brass whistle and copper fog horn.  
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Eliminate Bearing Trouble. Engines Run Faster.  
QUICK A SIZE SHIPMENT N POWER OF Y SPEED

**FOR ANY BOAT**  
No Extra Thrust Bearing. No Leaky Stuffing Boxes. Easier to Install Engines.

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STOCK SIZES At Your Dealers or Address

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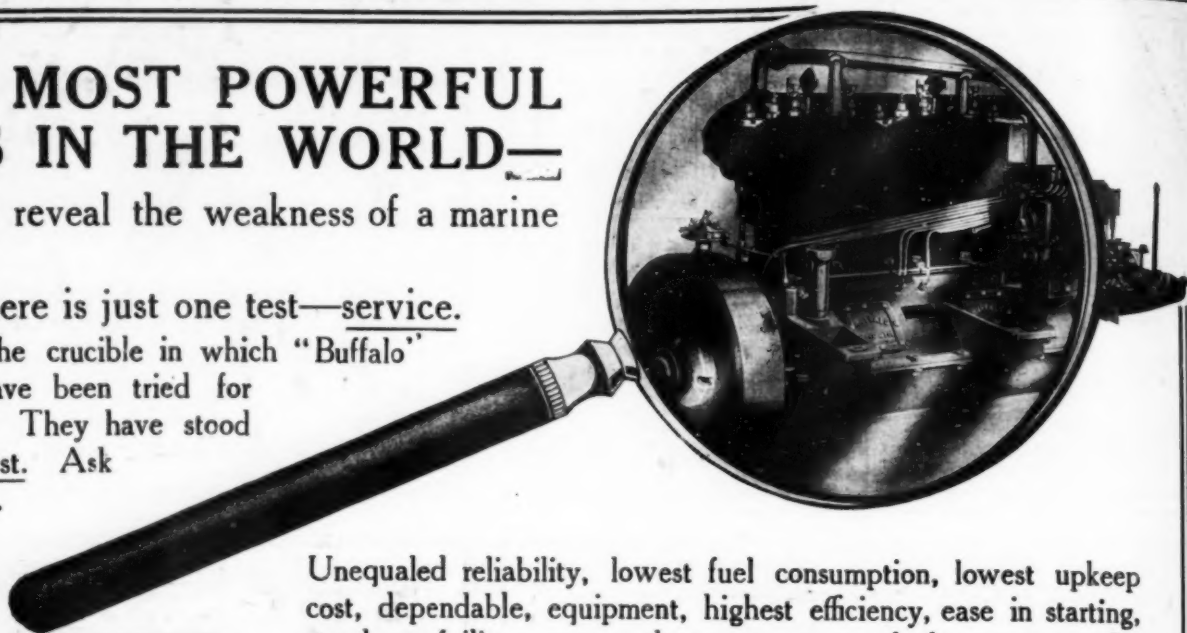
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Twenty models of four-stroke marine engines in slow speed, medium speed and high speed designs—3 to 150 h. p. for work boats, speed boats, launches and cruisers of all kinds. They operate on gasolene or kerosene.

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BUFFALO, N. Y.

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 Send me information concerning the best power plant for a boat of the type before which I have marked "X" and of the size here stated:

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<input type="checkbox"/> Auxiliary	<input type="checkbox"/> Runabout
<input type="checkbox"/> Cruiser	<input type="checkbox"/> Str. Paddle Wheel
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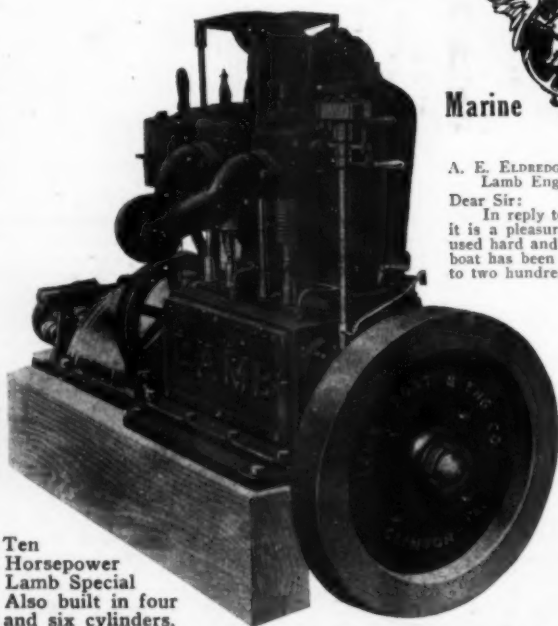
Length \_\_\_\_\_ Beam \_\_\_\_\_  
 Draft \_\_\_\_\_ Speed desired \_\_\_\_\_

Name \_\_\_\_\_

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This expression covers the most thorough recommendation of a marine engine possible to give. It is an expression characteristic of Lamb owners because they invariably receive the service which warrants such a sweeping declaration. Whether it is a ten horsepower cruiser model on a big seventy horsepower heavy duty motor the quality of design, materials, workmanship and service are the same.



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Also built in four  
and six cylinders.



Marine Engines

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Lamb Engine Co., New York.

Dear Sir:

In reply to your letter of September 15th, asking about the 10 H. P. Special Lamb in the "VIRGINIA," it is a pleasure to tell you that the engine has given entire satisfaction under all conditions. It has been used hard and has been run as long as twenty-eight hours at a stretch, and has never failed on a run. The boat has been entered in nine open races under A. P. B. A. rules this season, varying in length from ten to two hundred and ten miles, and has finished first or second in each.

Yours very truly,

(Signed) H. M. BETTS.

### VIRGINIA'S RECORD FOR 1913

June	7—Columbia Yacht Club Regatta.....	Finished Second
June	15—Hudson River Motor Boat Club, around Manhattan Island....	Finished First
July	4—Tappan Zee Yacht Club Regatta.....	Finished Second
July	12-13—Colonial Y. C. Cornfield Lightship and return (210 miles)....	Finished Second
July	19—N. Y. Motor Boat Club Regatta.....	Finished Second
Aug.	9—Colonial Yacht Club, Poughkeepsie and return (132 miles)....	Finished First
Aug.	16—Harlem Yacht Club, Stratford Shoal and return (70 miles)....	Finished First
Aug.	24—Hudson River Motor Boat Club, Rockland Light Race.....	Finished First
Sept.	20—Shattemuc Yacht Club Regatta.....	Finished Second

Write today for catalog of the entire line of Lamb Four Cycle Marine Engines. High Speed, Medium Duty and Heavy Duty types from 10 to 60-70 H. P. Two to Six Cylinders.

Manufactured by the Lamb Engine Co., Clinton, Iowa

**Lamb Engine Company of New York**

Eastern and Foreign Distributors

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H. M. BETTS  
52 Broadway, New York

Sept. 25th, 1913.

"VIRGINIA"  
Mr. H. M. Betts, owner.  
See Mr. Betts' letter below.

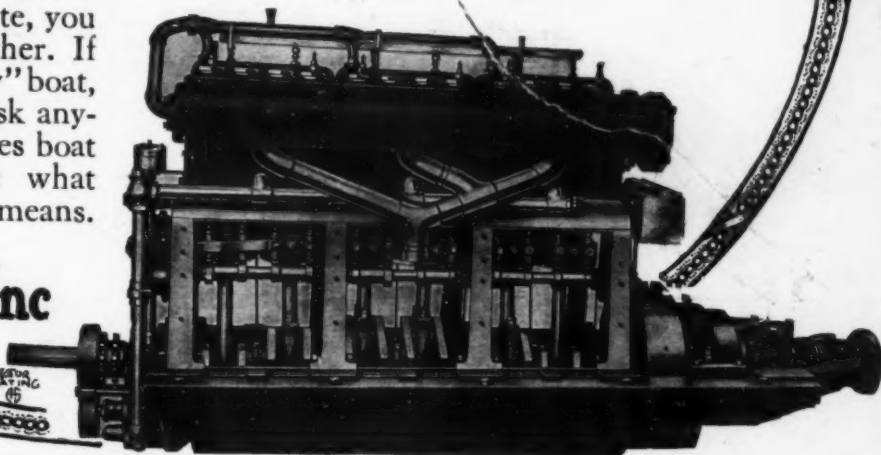


# HOLMES MOTORS

THE arguments that cause the United States Life Saving Service to equip their large power life boats with Holmes motors in preference to any others, *ought* to appeal to you. You know a lifeboat has to be ready to go when called upon and you know what weather conditions they operate in. The Government can't afford to take chances, and if you will stop to think a minute, you will realize that you can't either. If you want a "Holmes Quality" boat, we can build that too. Ask anybody who owns a Holmes boat or a Holmes engine what "Holmes Quality" means.

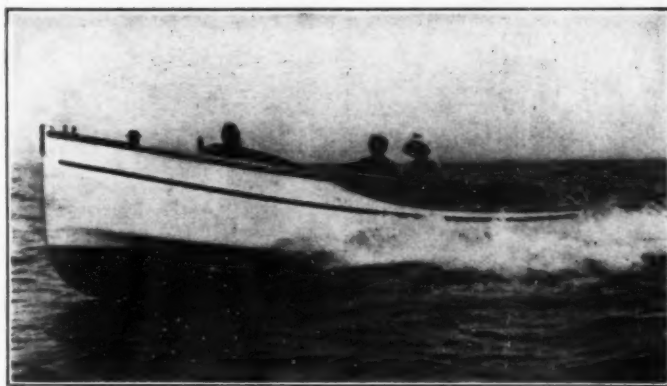
**The Holmes Motor Co., Inc**

**West Mystic, Conn.**



## "Piute III"

24-foot Hand V-Bottom Run-about, with 30 H. P. Model 5 Loew-Victor Motor. Speed 22 statute miles per hour.



## 51 Hand V-Bottom Boats

since January 1st, 1913, have been equipped with

**Loew-Victor Engines**

**W**HY does a prominent naval architect like Wm. H. Hand, Jr., advise his clients to use Loew-Victor Engines? Because he knows that the reputation of his boats is just as dependent upon the reliability of the power plant as upon the cleverness of the design, and because he knows that it is the policy of the Loew-Victor Engine Co. never to permit a customer to be dissatisfied, and that this Company has a product that is good enough and resources that are great enough to carry out such a policy.

**LOEW-VICTOR ENGINES** are built in 10 models, from 6 to 150 h. p.

**LOEW-VICTOR ENGINE CO., 2046 Dominick St., CHICAGO, ILL.**

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THE remarkable evolution of the eight-cylinder, 150-180 H. P.,  $5\frac{1}{2}$ " x  $6\frac{3}{4}$ " STERLING Engine has been one of the interesting happenings of the past season. Last year this engine created a very wonderful record as a racing engine; it repeated this performance this season also. But another field has been developed by this unique motor—that of powering high speed cruisers and runabouts, and it is proving itself to be as efficient a motor for this work as for racing purposes.

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